Operating Instructions
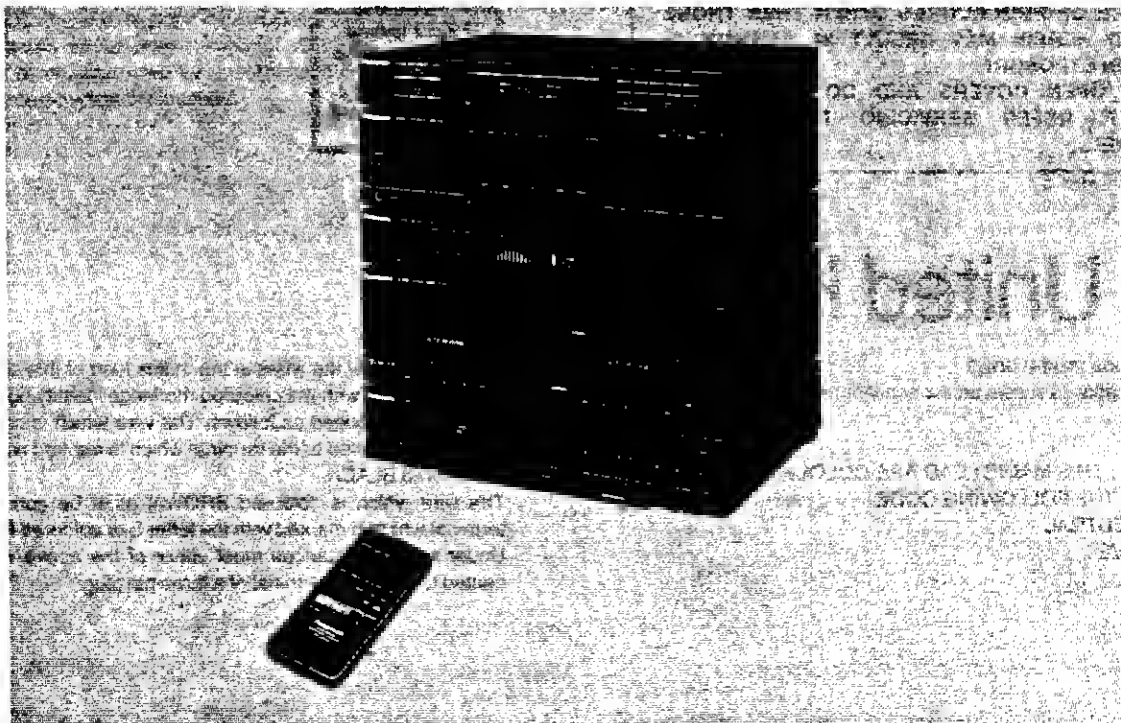
Notes:
- Specifications differ according to the arae code.
- The "EB" eraa code, for example, indicatas United Kingdom specifications.
- The "EB" indication is shown on the packing case and serial number tag.

Panasonic

Before operating this unit, please read these Instructions complataly.

EB GN

Dear Stereo Fan

We want to thank you for selecting this product and to welcome you to the growing family of satisfied Panasonic product owners around the world.
We feel certain you will get maximum enjoyment from this new addition to your home.
Please read these operating instructions carefully, and be sure to keep them handy for convenient reference.

Contents

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.
DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

DANGER-Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

(inside of product)

For United Kingdom

("EB" eree code model only)
The "EB" indication is shown on the serial number tag.

Important
THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
BLUE: NEUTRAL
BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows. The wire which is coloured BLUE must be connected to the terminal which is merked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is merked with the letter L or coloured RED.
Under no circumstances must either of the above wires be connected to the earth terminal of e three pin plug.

Suggestions for Safety

■ Use a standard AC wall outlet

1. Use from an AC power source of high voltage, such as for an air conditioner, is very dangerous.
   There is the possibility that a fire might be ceused by meking euch e connection.
2. A OC power aource cannot be used.
   Be sure to check the power sourca carefully, especially on a ship or other place where DC is used.

■ Grssp the plug when disconnecting the power supply cord

1. Wat handa ere dengaroue.
   A dangerous electric shock mey result if the plug is touched by wet hands.
2. Never place heevy items on top of the power eupply cord, and never force it to bend eherply.

■ Place the unit where it will be well ventilated

Place this unit at leest 10 cm (4") awey from well surfaces, etc.

■ Avoid places such as the following:

In direct eunlight or in other plecea where the tempereture is high.
In placee where there is exceeslve vibration or humidity.
Such conditions might demege the cebinet and/or other component perts end thereby shorten the unit's servica life.

■ Be sure to place the unit on a flat, level surface

If the surface is inclined, e melfunction may result.

■ Never attempt to repair or reconstruct this unit

A serious electric shock might occur if this unit is repaired, disassembled or reconstructed by uneuthorlzed persons, or if the internel parts ere eccidentally touchd.

■ Take particular care if children sre present

Never permit children to put enything, especielly metal, inside this unit. A serious electric shock or melfunction could occur if erticles such es coins, needles, screwdrivers, etc. ere inserted through the ventilation holes, etc. of this unit.

■ If water is spilled on the unit

Be extremely careful if water is spilied on the unit, because a fire or serious electric shock might occur. Immedietely disconnect the power cord plug, end consult with your dealer.

■ Avoid sprsy-type insecticides

Insecticidas might cause cracks or "cloudiness" in the cabinet end plestic perts of this unit. The ges used in such spreys might, moreover, be ignited suddenly.

■ Never use alcohol or paint thinner

Thase and similar chemicals should never be used, because they might cause flaking or cloudiness of the cebinet finish.
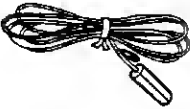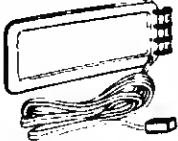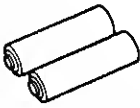
■ Disconnect the power supply cord if the unit will not be used for a long time

If the unit is left for a long time with the power ON, this will not only shorten its useful operetion life, but may elso cause other troubles.

■ If trouble occurs

If, during operetion, the sound is interrupted or indicators no longer illuminete, or if abnormal odor or smoka is detected, immedietely disconnect the power cord plug, and contact your dealer or en Authorized Service Centar.

Accessories

●AC power supply cord 1

●FM indoor antenna 1

●AM loop antanna 1

●AM antenna holder 1

●Screws 2

●Remote-control transmitter 1

●Batteries 2

●Attachment plug ....; 1
(For United Kingdom)

Nota: Configuration of AC power supply cord and FM indoor antanna differs according to area.

THIS MUSIC SYSTEM IS CAPABLE OF RECEIVING THE NEW AM STEREO BROADCASTS FROM THE AM BAND RADIO STATIONS. HOWEVER LIKE MANY MUSIC SYSTEM CURRENTLY AVAILABLE ON THE MARKET IT WILL REPRODUCE THIS AM STEREO SIGNAL ONLY IN AM MONO, WHICH, IN EFFECT, IS OF NO LESSER QUALITY THAN YOUR EXISTING AM MONO MUSIC SYSTEM.
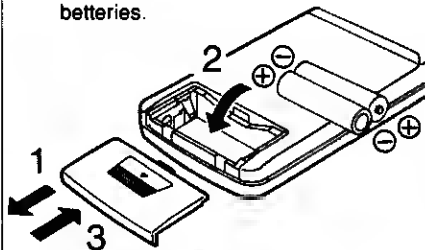
Remote-Control Transmitter

Insertion of remote-control transmitter batteries

1. **Open the cover.**
2. **Insert the betteries.**
   - Be sure to insert according to the (+) and (−) indications in the battery compertment.
   - Use two UM-4 "AAA" (R03 1.5 V) size betteries.

3. **Close the cover.**

■ Battery life
Battery life is ebout one yeer. (Bettery life mey very depending upon the frequency of use and other conditions of use.)
The betteries should be replaced if the unit cannot be opereted even when the remote-control transmitter is brought close to the unit.

■ Battery notes
- Be sure that batteries ere inserted so thet they ere pleced correctly with respect to the (+) and (−) indications in the battery compartment. If the batteries are not inserted correctly, they may leak and demage the remote-control transmitter.
- Do not use rechargeeble (nickel-cadmium) type batteries.
- Do not mix old end new betteries, or batteries of ditferent types (carbon and elkeline, etc.).
- If the remote-control trensmitter is not to be used for a long period of time, take out the betteries and store them in a cool, derk place.
- Remove and dispose of worn-out batteries.
- Never attempt to recharge or short-circuit the batteries, end do not disessemble them or expose them to excessive heat or throw them into e fire.
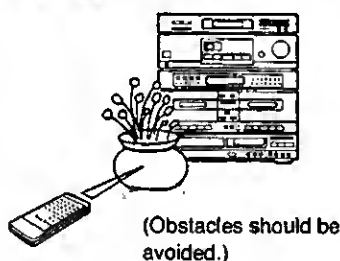- If a battery leaks, remove both betteries and dispose of them, and then thoroughly cleen the battery compertment before inserting new betteries.

Remote-control transmitter operation notes

Use the remote-control trensmitter within 6 meters (20 ft.).

60° 6 meters (20 ft.)
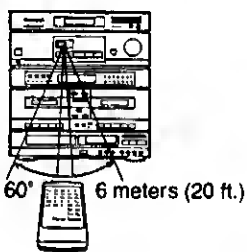
Fsce it towards the remote-control signsl receptor of this unit.

(Obstacles should be avoided.)

Be sure the trensmitter psrt of the remote-control trensmitter snd the receptor part of this unit sre free from dust.
Excessive dust might prevent reception.

Avoid dust.

Other notes

1. Do not expose the receptor (on this unit) to direct sunlight or other strong light, beceuse to do so might result in incorrect operation.
2. Do not use e remote-control trensmitter for a TV set, a VCR or other video component at the seme time as this remote-control trensmitter is being used, because to do so might result in incorrect operation.

3. If this unit is installed in a rack with gless doors, the glass doors' thickness or color might make it necessary to use the remote-control transmitter e shorter distance from the unit.

4. The control panel of the remote-control trensmitter may be covered by a clear plastic protective sheet. This sheet can be removed if desired.

Connections

CLASS 1 LASER PRODUCT

Household AC outlet
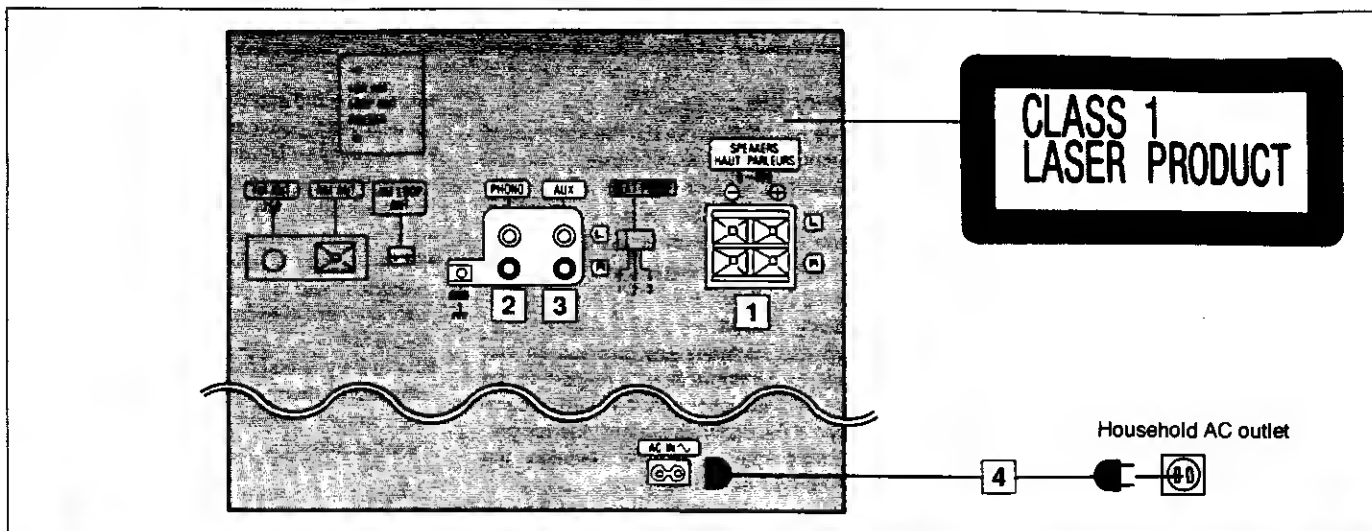
1 "SPEAKERS" terminals

The impedence of eny speaker used with this unit must be 8–16 ohms.
Be sure to connect the striped cords to the negative terminals.

Connection of speaker cords

① Strip off the outer covering, and twist the center conductor.

15 mm → Twist

② Tilt the lever back and insert the cord.
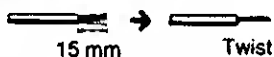
③ Close the lever and pull the cord gently to be sure that it is secured.

Notee:
- To prevent damage to circuitry, never short-circuit positive (+) and negetive (−) speaker terminels.
- Be sure to only connect positive (+) cords to positive (+) terminals, and negative (−) cords to negative (−) terminals.
- Connections ot speeker cords should be mede before connecting the AC power supply cord.
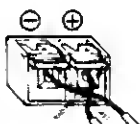
2 "PHONO" terminals

Connect the turntable which was specielly designed for use with this system, to these terminels.

PHONO

Tumtable (not included)

L
R
GND
(R) (L)
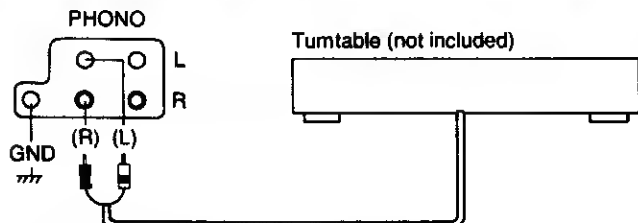
■ "GND" terminal
This terminel ie for use with tumtables which have a ground wire.

3 "AUX" terminals

Connect a second tepe deck (for pleybeck only) etc.

AUX

Second tape deck (not included)

L
R
(R) (L)

LINE OUT
R   L
(R) (L)

Stereo connection cable (not Included)
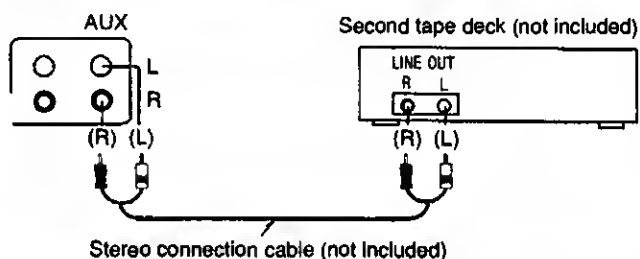
4 AC power supply cord

① Connect this cord only efter ell other cables have been connected.

Note:
Configuration of the AC outlet end AC power supply cord differ eccording to erea.

② **For United Kingdom**

Household AC outlet

Fit e suitable plug to the AC power supply cord.

Antenna Connections

- FM indoor antenna
  - Fix with tack or tape
  - FM indoor antenne (includad)
- FM outdoor antenna
  - 75-ohm coaxial cabla (not included)
- AM loop antanna location
- FOR AM LOOP ANT HOLDER
- FM ANT — AM ANT — AM LOOP ANT
- For United Kingdom
  - Use tha attachmant plug (included).
- AM outdoor antenna
  - 5–12m
  - Vinyl-covared wire (not included)
- AM loop antenna
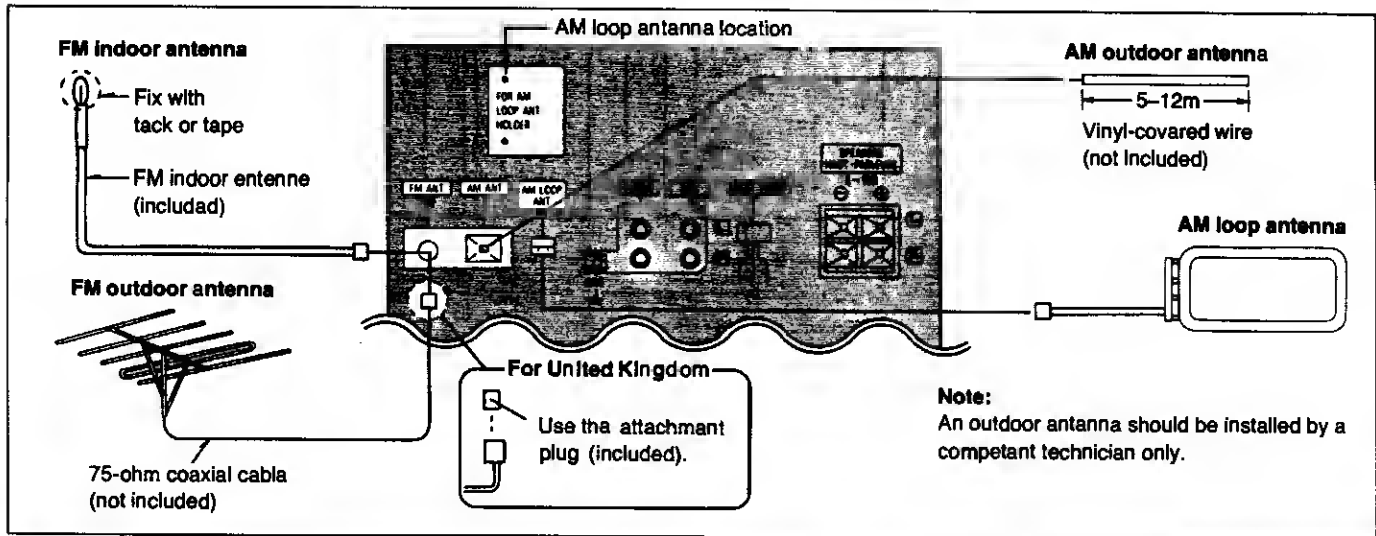
Note:
An outdoor antanna should be installed by a competant technician only.

FM antenna

■ FM indoor antenna (included)

Attach to a wall (using tack or tapa) facing in tha direction of best reception.

For beet reception sound quelity:
An FM outdoor antenne is recommanded.

Notee:
- The tack should not contact tha intamel entenne wire.
- Disconnect this antanne if en FM outdoor entenne is installed.

■ FM outdoor antenna (not included)

If the FM indoor entenna does not provide setlsfectory reception of FM broadcasts, en outdoor entenne should be used.

The outdoor entenne mey be required in e mountalnous region, or if this unit ls located insida a reinforced-concrete building, etc.

—If FM antenna terminal ls as shown below—

① Remova a piece of the outar vinyl shaath from the and.

30 mm

② Bundla tha shield braid, and remove e piece of tha innar vinyl sheeth covaring tha core wire.

15 mm

③ Tilt the lever back end insert tha core wire end the shield braid.

FM ANT

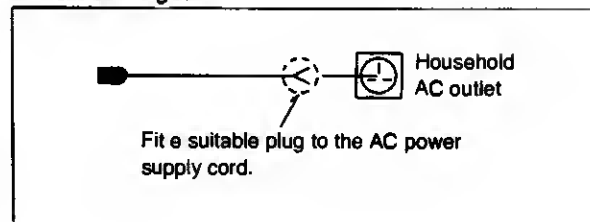④ Close the lever and pull tha cable gantly to be sura that it is secured.

AM antenna

■ AM loop antenna (included)

Connect the AM loop antenne to the AM antenna terminal, and attach lt to a column, rack or this unit (facing in the direction of best reception).

Notes:
- If this antenna ia not properly inatalled, AM broadcasts will not be received.
- Be eure to connect the AM loop antenna aven when an outdoor antanne le used.
  Pay attention to the following points when attaching the antenna.
- Do not ettach it horizontally (to do so would impair reception).
- Do not attach lt close to power cords, speakar wires or metel surfaces (to do so would result ln noise).

When attaching the antenna to the unit

This type of installetion may cause impaired reception or reault ln signai noise. If posalble, ettach the antenna to e reck, a wall, or a column.

Move the antenna toward the right or left to find the point of best reception.

Screws (included)

Raar panel of tha unit — AM entenne holder (included)
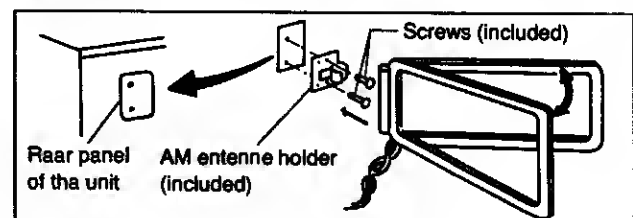
■ AM outdoor antenna (not included)

The outdoor antanna mey be required in a mountainoue region, or if thie unit is located inalde a reinforced-concrata building, etc. Use 5–12m (16–40 ft.) of vinyl-covered wire horizontally at tha window.

Front Panel Controls and Functions
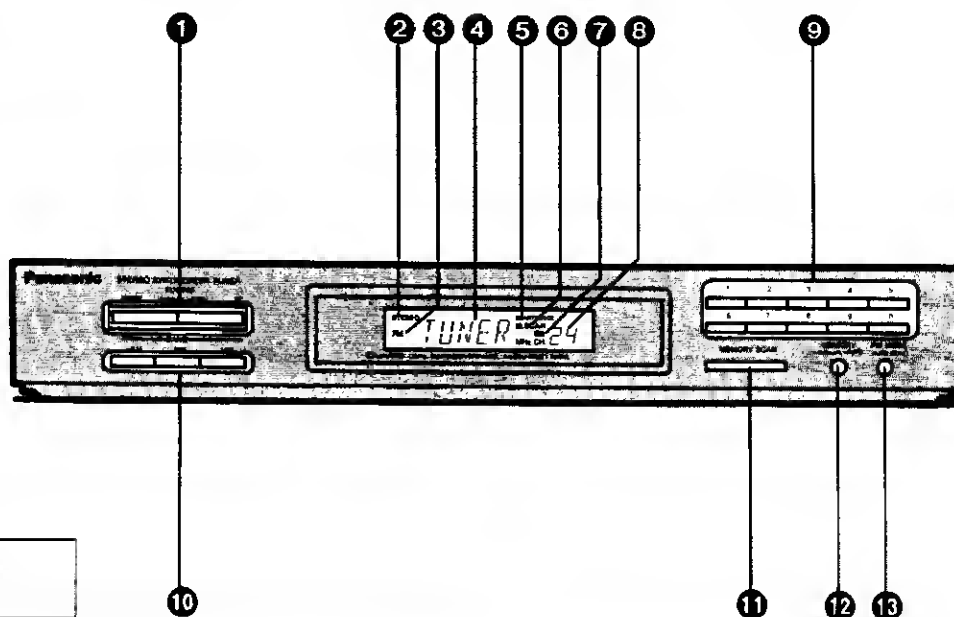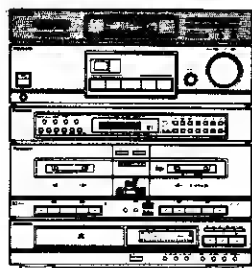
The indication AM used here includes both MW and LW.

Tuner section

1 Tuning buttons (TUNING)

These buttons are used for tuning to the desired broadcast station.

2 FM stereo Indicator (STEREO)

This indicator automatically illuminates when an FM stereo broadcast is being received.

It will not illuminate if the FM mode selector is set to the moneural mode.

3 Band Indicator (FM, LW, MW)

This indicator indicates the band selected by using the band selector.

4 Digital frequency/input display

This display shows the sound source selected by preseing one of the input selectors. If the "TUNER" input selector is pressed, there will be a change to the frequency after the source is indicated.

5 Quartz-lock Indicator (QUARTZ LOCK)

This indicator illuminates when the tuner is precisely tuned to a broadcast station.

6 Memory scan Indicator (M.SCAN)

This illuminates when the memory scanning is activated.

7 Memory Indicator (M)

This indicator illuminates when the memory button is pressed.

8 Channel display

This display shows the channel number selected by one of the preset-tuning buttons.

9 Preset-tuning buttons (1–0)
(24 CHANNEL RANDOM PRESET TUNING)

These buttons are used to preset broadcast frequencies into the memory of this unit, and are also pressed to recall the desired preset stations. (Refer to pages 14, 15 and 18.)

10 Band selectors (BAND)

These selectors are used to select the band.

11 Memory scan button (MEMORY SCAN)

This button can be used to locate a desired broadcast station; each broadcast station is selected for about four seconds.

12 Memory button (MEMORY)

This button can be used when presetting broadcast station frequencies to the memory. (Refer to pages 14 and 15.)

13 FM mode selector (FM MODE)

This unit automatically switches to the stereo mode when an FM stereo broadcast is received. This selector is used to select the mode (stereo or moneural) of FM broadcast signals. (Refer to page 18.)
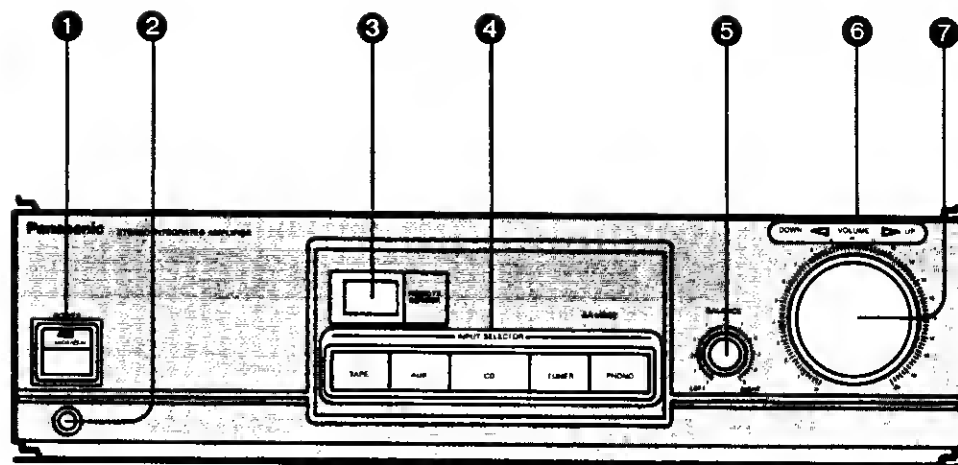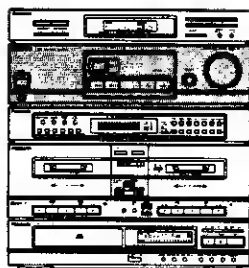
Amplifier section

① Power "STANDBY ⏻/ON" switch and indicator (POWER/STANDBY ⏻/ON)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY ⏻ position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

●The indicator will illuminate when the unit is in "STANDBY" condition.

② Headphones jack (PHONES)

③ Remote-control signal receptor (REMOTE SENSOR)

Receives the signals from the remote-control transmitter.

④ Input selectors (INPUT SELECTOR)

These selectors are used to select the sound source to be heard, such as a phono disc, radio broadcast, etc.

⑤ Balance control (BALANCE)

This control can be used to adjust the balance of sound heard from the left and right speaker systems.

⑥ Volume-level adjustment indicators

One of these indicators flashes continually to indicate when the sound volume level is being adjusted by using the volume controls on the remote-control transmitter.
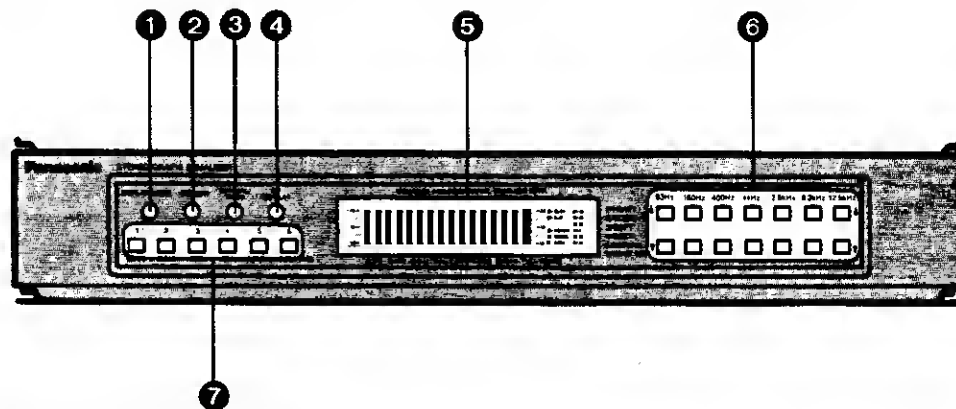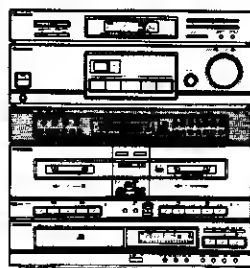
UP (▷): When increasing the volume level.
DOWN (◁): When reducing the volume level.

⑦ Volume control (VOLUME)

Graphic equalizer section

❶ Display mode button (DISPLAY MODE)

This button can be used to change any of five types of spectrum display modes. (Refer to page 17.)

❷ Memory button (MEMORY)

This button is used to program the equalization curve into the memory.

❸ Memory mode-select button (MANUAL/FIXED)

This button is used to select the equalization memory mode to be used.

MANUAL: Select this mode to program a desired curve to the unit's memory or to retrieve a curve that you have programmed.

FIXED: Select this mode to retrieve a curve that was originally pre-programmed to the unit's memory.

❹ Equalization mode-select button (EQ ON/FLAT)

This button is used to switch the equalization correction function "EQ ON" and "FLAT". Each time a button is pressed, the mode changes alternately to one or the other of the following modes.

EQ ON: Select this mode to make an equalization correction.

FLAT: Select this mode if no equalization correction is desired.

Note that the "EQ ON" mode is automatically selected if a preset-memory button or an equalizer level-control button is pressed while this button is set to the "FLAT" mode.
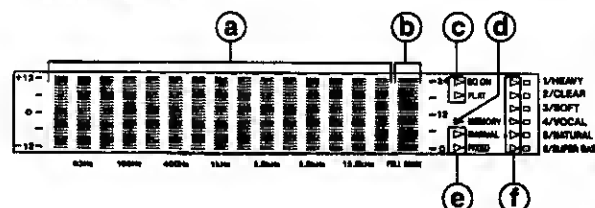
❺ Display section

ⓐ Spectrum/Equalization display

■ **Spectrum displays**

The 5 types of display can be shown. (Refer to page 17.)

■ **Equalization-level display**

The amount of correction is displayed by a series of lines (=) for each sound range (frequency range).
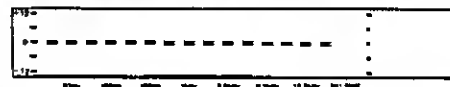
This will be shown for 3 seconds when any of the operation buttons of graphic equalizer (except the display mode button) is pressed.

ⓑ Full range display

This shows the full range level.

ⓒ Equalization-mode indicators

EQ ON: Indicates that the equalization effect has been switched ON.

FLAT: Indicates that the equalization effect has been switched OFF.

ⓓ **Equalization-memory indicator (MEMORY)**
This indicator illuminates when the memory button is pressed, thus indicating that an equalization curve can be programmed into the memory.

ⓔ **Memory-mode indicators**
MANUAL: Indicates that an equalization curve that you programmed into the memory can be retrieved.
FIXED: Indicates that one of the equalization curves that were originally programmed into the memory can be retrieved.

ⓕ **Equalization-preset indicators (1–6)**
The indicator corresponding to the pressed preset-memory button will illuminate.
MANUAL: Indicates an equalization curve that you programmed into the memory.
FIXED: Indicates one of the six equalization curves that were originally programmed into the memory.

⑥ **Equalizer level-control buttons (EQUALIZER LEVEL CONTROL)**
These buttons are used for adjustment of the equalization level.
Upper row: These buttons are used to increase the level of each sound range (frequency range).
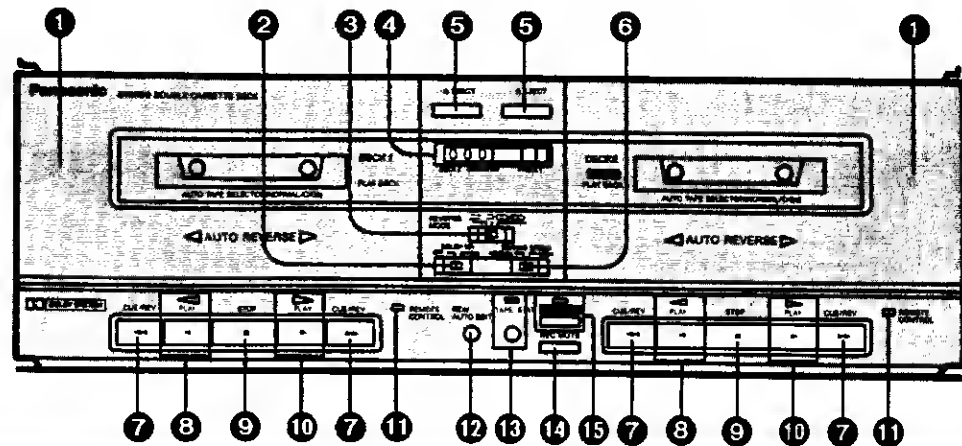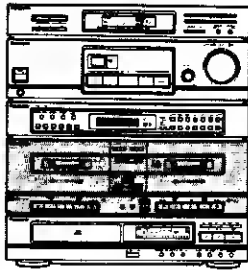Lower row: These buttons are used to reduce the level of each sound range (frequency range).

⑦ **Preset-memory buttons (1–6)**
These buttons are used to program an equalization curve into the memory, or to retrieve a curve originally programmed into the unit's memory.

Cassette deck section

❶ Cassette holder

❷ Dolby noise-reduction switch (DOLBY NR)

This switch cen be used to reduce the emount of the characteristic "hissing" noise heerd from the tepe.
(Reter to page 21.)

❸ Reverse-mode selector (REVERSE MODE)

Thls selector is used for the selection of the desire reverse mode for recording or playback.

❹ Tape deck 2 counter/reset button (DECK 2 COUNTER/RESET)

Thls tape counter shows the amount of tepe movement of the tape in deck 2.

The reset button can be used to reset the tape counter reading to "000".

Note:

To reset the tape counter, be sure to press the reset button completely. Otherwise, the tape counter mey not operete correctly.

❺ Eject button (⏏ EJECT)

This button is used to open the cassette hoider.

❻ Edit-recording tape-speed selector (EDITING SPEED)

This selector is used to select the recording speed when e tape-to-tape recording is made.

❼ Fast-forward/cue, rewind/review buttons (◀◀ CUE/REV ▶▶)

These buttons ere used to advence or review the tepe. During pleyback these buttons are used to cue or review while listening to the contents et high speed. (Refer to page 20.)

❽ Reverse-side playback button/Indicator (◀ PLAY)

This button is used to stert the playback or recording (of deck 2 only) ot side "B" of the cassette.

The indicator illuminetes during pleyback or recording, and flashes in the recording stand-by mode.

(The tape will move in the right-to-left direction.)

❾ Stop button (■ STOP)

This button is used to stop the tape movement.

❿ Forward-side playback button/Indicator (▶ PLAY)

This button is used to start the playbeck or recording (of deck 2 only) of side "A" of the cessette.

The indicator illuminetes during pleyback or recording, end fleshes in the recording stand-by mode. (The tape will move in the lett-to-right direction.)

⓫ Remote-control Indicator (REMOTE CONTROL)

This Indicator illuminetes to Indicate that this unit can now be controlled by the remote-control transmitter.

⓬ Rewind auto edit button (REW AUTO EDIT)

This button Is used to rewind the tape to the beginning end start e tape-to-tape eutomatic recording.

⓭ Tape edit button/Indicator (TAPE EDIT)

This button is used to start a tape-to-tape recording, simultaneously sterting tape deck 1 (the playback deck) and tape deck 2 (the recording deck). The Indicator illuminetes in this mode.

⓮ Record-muting button (REC MUTE)

This button is used while recording e tape on deck 2 to insert e silent intervel on the tape. (Refer to page 33.)

⓯ Recording pause button/Indicator (REC PAUSE)

This button is used to activate the recording peuse mode. The indicator will illuminate when in this mode. (Reter to page 33.)
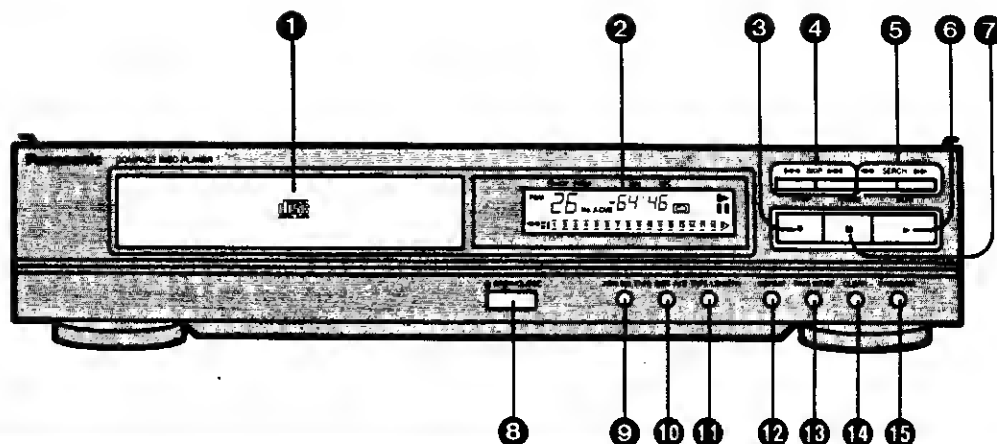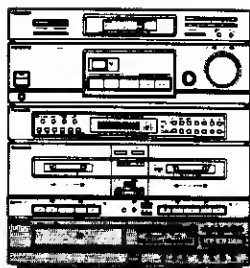
Compact disc section

❶ Disc holder

❷ Display section
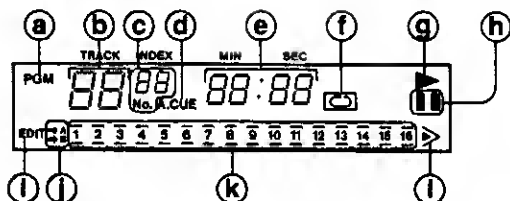
(a) Program play indicator (PGM)

(b) Track number display (TRACK)

(c) Programmed order number display (No.)

(d) Auto cue indicator (A. CUE)

(e) Time display

(f) Repeat play indicator (⟳)

(g) Play indicator (▶)

(h) Pause indicator (II)

(i) Compact disc edit indicator (EDIT)

(j) Tape side indicator (➡A, ➡B)

(k) Track number indicator (1–16)

(l) "Over" mark (≫)

This indicator lights if the total number of tracks on the disc is 17 or more.

❸ Stop button (■ STOP)

This button can be used to stop disc play, as well as to cancel the various play modes.

❹ Skip buttons (I◀◀ SKIP ▶▶I)

These buttons can be used to skip by track in the forward or reverse direction.

❺ Search buttons (◀◀ SEARCH ▶▶)

These buttons can be used to move rapidly forward or backward on the disc during play. The search speed is slow when the button is pressed at first and becomes faster if the button is pressed and held continuously.

❻ Play button (▶ PLAY)

❼ Pause button (II PAUSE)

❽ Disc holder open/close button (▲ OPEN/CLOSE)

❾ Auto cue button (AUTO CUE)

Pressing this button enables the unit to stop at the beginning of every track and switch to the play standby mode.

❿ Tape-side select button (SIDE A/B)

When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

⓫ Edit tape length button (TAPE LENGTH)

When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape used, so that as little tape as possible is wasted.

⓬ Repeat button (REPEAT)

⓭ Time mode select button (TIME MODE)

⓮ Clear button (CLEAR)

Each pressing this button makes one track cleared from the programmed sequence.

⓯ Program button (PROGRAM)

Pressing this button initiates the program play mode. You can then enter specific tracks using the numeric buttons at the remote control transmitter.

Memory Presettings

When broadcast frequencies have been preset to the memory, any of those broadcast frequencies can thereafter be easily selected by simply pressing one of the preset-tuning buttons. There are two methods for presetting broadcast frequencies in the memory: the automatic method (see below) and the manual method (refer to page 15.); select whichever method you prefer.

Tuning buttons

Memory indicator
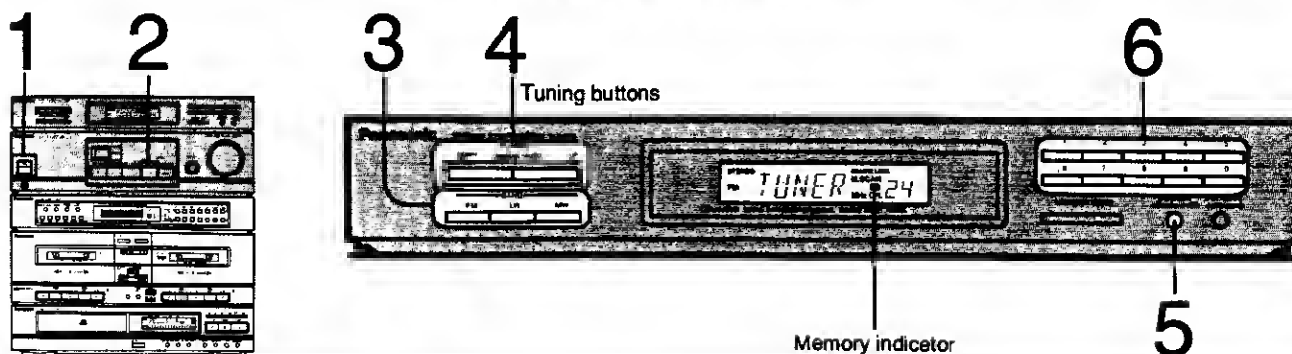
Automatic memory presetting

When this method is used, the frequencies of the selected broadcast stations are automatically preset (in sequence to higher frequencies) into the memory: "channels" 1 to 24 are available for the presetting of FM stations, "channels" 13 to 24 are available for MW stations, and "channels" 19 to 24 are available for LW stations. When a presetting is made to a channel that has already been preset, the prior presetting will be erased.

1 POWER
Switch ON the power "STANDBY ⏻/ON" switch.

2 INPUT SELECTOR
Press the "TUNER" button. *TUNER*

3 BAND
Press the desired band selector ("FM", "LW" or "MW").

4 TUNING
Set to the frequency from which you want to start automatic memory presetting.
(Refer to "Frequency tuning", below.)

5 MEMORY
Press and hold the memory button; release it when the display frequency begins to change. (The memory indicator will flash, and the automatic memory presetting is activated.)

6 1 - 0
Confirm the stations which are preset to each channel, and write them in the station log (page 18).
(Refer to "How to designate preset channels", at the bottom of the next page.)

■ Notes
- For automatic presetting in areas where there are fewer than 24 FM stations, the remaining channels (through channel 24) will be left unoccupied. The unoccupied channels can be filled by using manual memory presettings.
- For AM broadcasts with extremely strong signal transmissions, the frequency memorized may be slightly different than the correct frequency. If this occurs, make a manual presetting.

Frequency tuning ("TUNING" buttons)

DOWN Press to change the frequency downward.

UP Press to change the frequency upward.

1. Press and hold one of the tuning buttons, then release the button when the displayed frequency begins to change.

2. When the displayed frequency approaches the desired frequency, press one of the tuning buttons momentarily. (The displayed frequency will stop changing.)
Note:
The changing of the displayed frequency will be automatically stopped (by the automatic tuning function) if a broadcast station frequency is located during the tuning process. If the frequency at which it stops is not the desired frequency, repeat step 1 at the left.

3. After stopping at step 2, tap one of the tuning buttons a few times until the desired frequency is reached.

Note:
If e new broadcast station is preset into a channel, tha broadcast station which was previously antarad in that channel will be automatically arasad.

Tuning buttons

Preset-tuning buttons

~ TUNER 24

Memory indicator
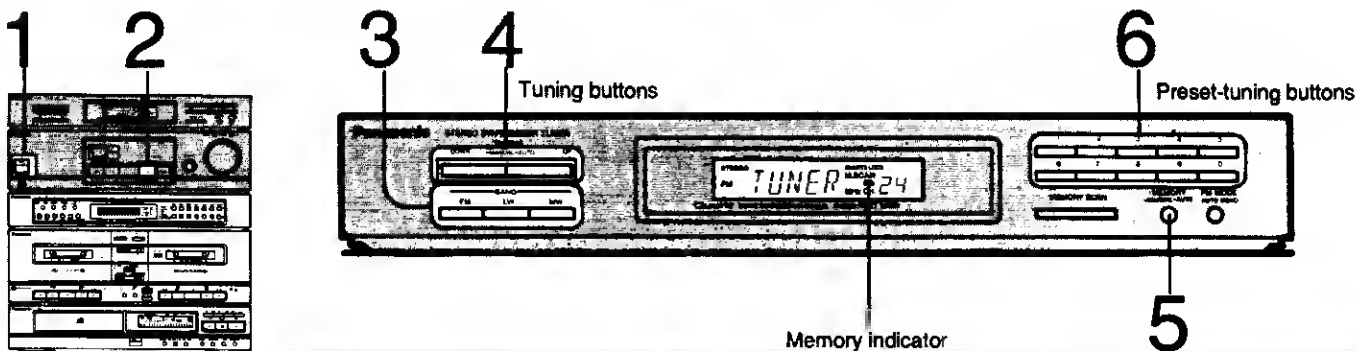
Manual memory presetting

Stations can ba fraaly presat to any desirad channal.
A maximum of 24 broadcest stations can be memorizad.

1 INPUT SELECTOR: POWER
Switch ON the power "STANDBY ⏻ /ON" switch.

2 INPUT SELECTOR
Press the "TUNER" button. *TUNER*

3 BANO
Press the desired band selector ("FM", "LW" or "MW").

4 DOWN UP
Press the appropriate tuning button to tune to the desired broadcast.
(Rafar to "Frequancy tuning" at the bottom of tha previous page.)

5 MEMORY
Press the memory button momentarily. FM *88.10* MHz CH.
(Tha mamory indicator will illuminata.)
Note:
If the memory button is pressad continuously. the automatic mamory presetting is activatad. To stop tha automatic memory presetting, prass tha tuning button.
Than begin again from stap 4,

6 1-0
Select the desired "channel" FM *88.10* CH. 3
(Refer to "How to dasignete praset chennels", below.)

7 Repeat the above procedures to make memory presettings; write the presettings in the station log (page 18).

How to designate preset channels

● **To designate channels 1-9:** Prass the appropriate (1–9) preset-channel button.
● **To designate channels 10-24:**
① Press the button for the laft digit (1 or 2).
② Press the button for the right digit (0–9) within 2 seconds aftar pressing the first button.
Example: To designate channel 12
Press the "1" button and then the "2" button.

8.1 MHz CH. 1- → Within 2 sec. → *8.1 MHz CH. 12*
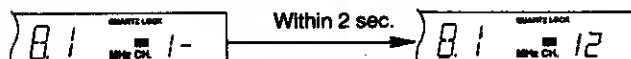
Note:
If the intarval between pressing tha first button and pressing the second button is more than about 2 seconds, the setting may not be made correctly. If this happens, maka tha setting once again.

Standard Operations

STEREO GRAPHIC EQUALIZER

This indicator will illuminate when the power cord of this unit is connected from the electric outlet. When this indicator illuminates, the remote-control transmitter can be used.

Headphones
(not included)
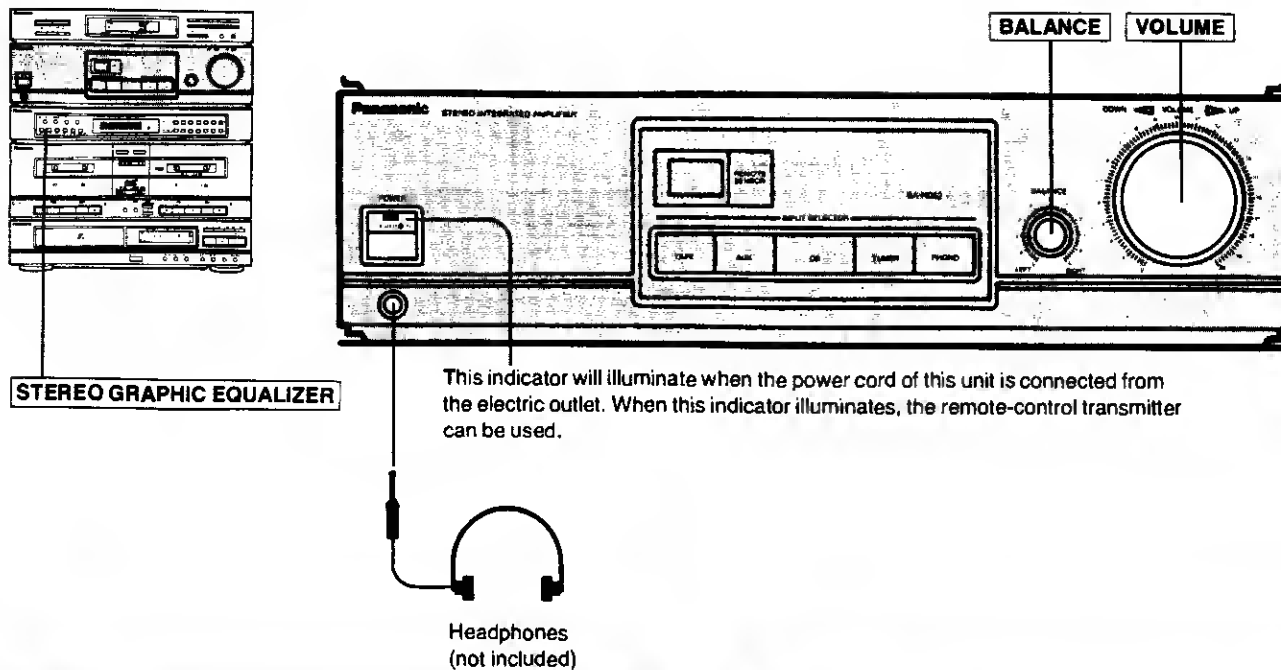
To listen through headphones

PHONES

Connect headphones (not included) to the headphones jack.

Notes:
* Reduce the volume level before connecting headphones.
* Sound from the speakers will not be heard when headphones are connected to this jack.
* Avoid listening for a long time at a volume level so high that it irritates the ears.

After record play or radio broadcast, etc. has started

VOLUME
Adjust the volume level.

BALANCE

Adjust the left/right volume balance.
While listening to an AM broadcast or a moneural FM broadcast, balance the sound so that it seems to be heard from the center, between the speakers.

STEREO GRAPHIC EQUALIZER
Change the tone quality.
(See the page 28.)

After listening is finished

Be sure to reduce the volume level, end switch this unit to standby mode using its "STANDBY ⏻ /ON" switch or an "ON/OFF" switch on the remote-control transmitter.
Note:
The input selection and equalizer settings will be retained (as they were at the time when the power is switched to standby mode) by the memory back-up function.

Display mode button

	−24 ▷ EQ ON ▷□	1/HEAVY
+12	▷ FLAT ▷□	2/CLEAR
0	▷□	3/SOFT
−12	−12 ▷ MEMORY ▷□	4/VOCAL
	▷ MANUAL ▷□	5/NATURAL
−12	−0 ▷ FIXED ▷□	6/SUPER BASS

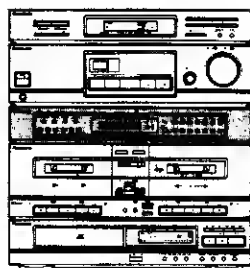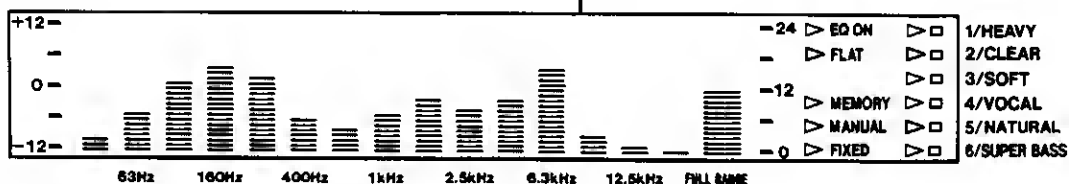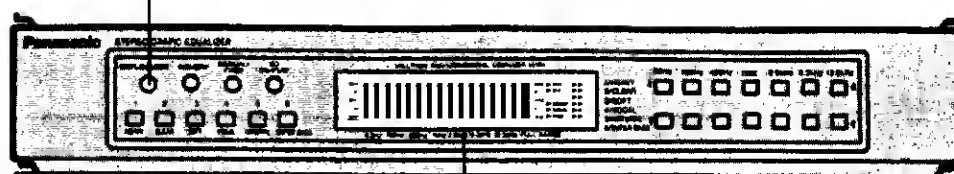63Hz 160Hz 400Hz 1kHz 2.5kHz 6.3kHz 12.5kHz FULL RANGE

Spectrum display

The following 5 types of display are possible.
The display can be changed by pressing the display mode button.

1 Bar-type display

This display can be used to show the output strength for each sound range (frequency range), and to show the output strength of sound for all ranges (full range) by a bar-type display. Every time the unit is set to "ON", this type display will always appear.
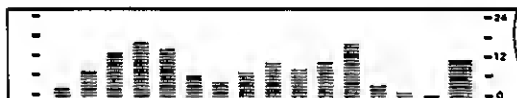
2 Peak-hold display

The peak sound value of each sound range is held on the display for about two seconds after it occurs.
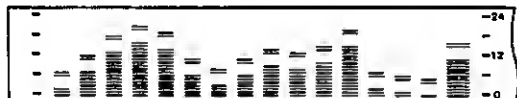
3 Dot display

Only the upper two parts of the bar display are shown, thus making the strength of the sound for each sound range even easier to see.
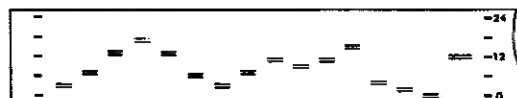
4 Hustler mode

The peak sound value of each sound range is displayed in augmented form.

5 Aurora mode

The peak sound value of each sound range is displayed in inverted form.

Note:
If an equalization level-control or the memory-mode selector or a preset-memory button is pressed during any display other than the equalization-level display, the equalization-level display will be shown for about 3 seconds, after which the former display will return.

Listening to Radio Broadcasts

FM starao indicator

Mamory scan indicator

MEMORY SCAN

FM MODE

Have you completed the steps (on page 14 or 15) of "Memory Presettings"?
It not, follow the appropriata staps (on page 14 or 15), and than select the dasired station by following tha staps balow, or tune by using tha tuning buttons. (Rafar to "Manual tuning", at tha right.)

1 `POWER`
Switch ON the power "STANDBY ⏻ /ON" switch.

2 `INPUT SELECTOR`
Press the "TUNER" button. `TUNER`

3 `1`-`0`
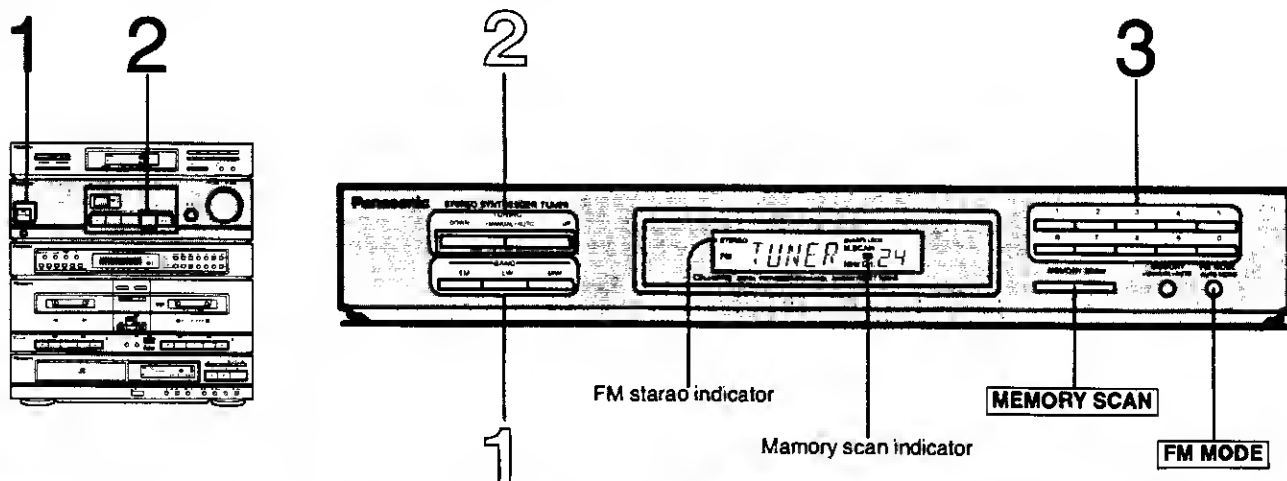Press the button for the deaired channel (1–24).
(Rafar to "How to designata prasat channals" at the bottom of paga 15.)
The FM starao indicetor eutomatically Illuminatas whan an FM stareo broedcast is being receivad.
Note:
If, for channels 10–24, tha intarval between prassing tha first button and prassing tha second button is mora than about 2 seconds, the satting may not be made corractly. It this happens, make the setting onca again.

4 Adjust the volume level and the tone quality aa desired.
(Rafar to pagas 16 and 28.)

Manual tuning

Follow the staps at tha latt, axcept that, for step 3, toilow the steps below.

1 `BAND`
Preaa the desired band selector ("FM", "LW" or "MW").

2 `DOWN` `UP`
Select the desired broadcast atation by uaing one of the tuning buttons.
(Refer to "Frequency tuning", et the bottom of page 14.)

If noise is excessive in FM broadcasts

`FM MODE`
Press the FM mode selector.
This unit eutomatically switchas to the stereo moda whan a stereo broadcast is racaived.
Prass this button tor monaural reception, ragardlass of tha strangth ot tha incoming FM signal or whethar it is stareo or mono.

Station Log

CH. 1	CH. 2	CH. 3	CH. 4	CH. 5	CH. 6
CH. 7	CH. 8	CH. 9	CH. 10	CH. 11	CH. 12
CH. 13	CH. 14	CH. 15	CH. 16	CH. 17	CH. 18
CH. 19	CH. 20	CH. 21	CH. 22	CH. 23	CH. 24

Memory scanning

This feature is convenient for use when trying to locate a certain broadcast, or to listen to each station briefly to hear what is being broadcast, because each frequency can be heard (in sequence) for about four seconds.

MEMORY SCAN **Press the memory scsn button.**

Each frequency will then be heard (in sequence) for about four seconds.
(The memory scan indicator will flash on and off during scanning.)
When e preset chsnnel is being received:
Scanning will begin from that channel, and will then continue in sequence to higher channels. When the highest channel is reached, scanning will then continue, repeating from the lowest channel.
When a menuelly tuned chennel ls being received:
Scanning will begin from preset channel "1", and continue in sequence.

■ When s brosdcsst you wsnt to listen to is found

MEMORY SCAN (at this unit) **or** TUNER PRESET (at the remote-control transmitter)

Press the memory scan button or the tuner preset button (st the remote-control trsnsmitter).
(The broadcast will continue, even after four seconds have passed.)

Back-up memory

The back-up function maintaina the preset memory and the most-recent memory (see below) when the power is switched OFF, in the event of a power failure, or if the power cord is disconnected.
The memory will be meintained for as long as approximately one week.
**Most-recent memory**
The most-recent memory system "remembers" the broedcast station last tuned to when the unit was switched to standby mode. That station will be automatically tuned to when the power is switched ON.

■ If frequency presettings sre sccidentally erssed

1. Switch ON the power "STANDBY ⏻/ON" switch.
2. Make the frequency presettings (on page 14 or 15) once again.

Listening to Tapes

DOLBY NR

3 Eject button

REVERSE MODE
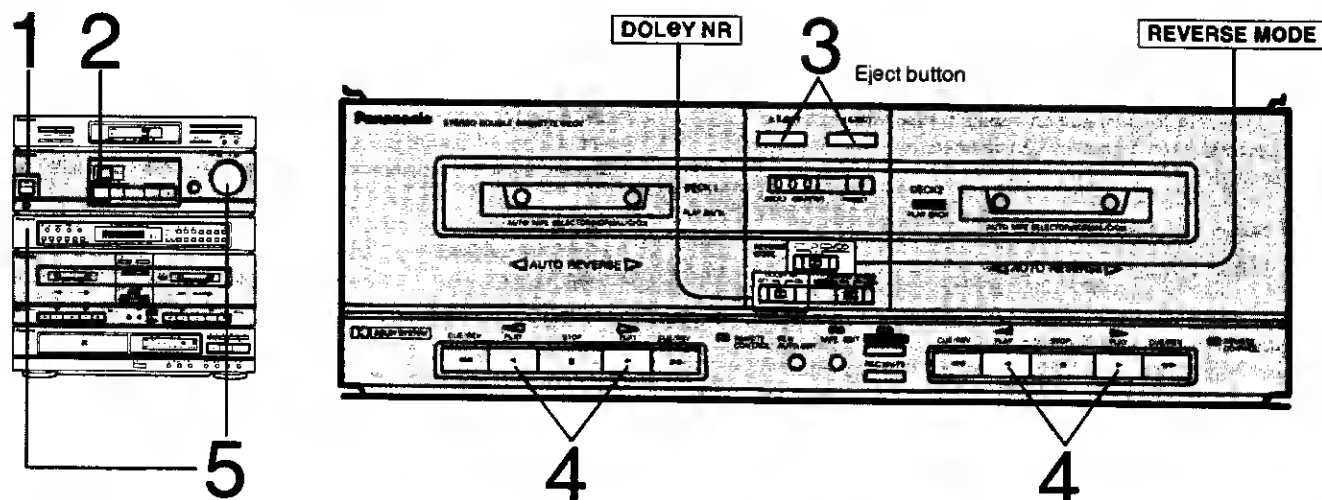
Either tape deck 1 or tape deck 2 can be used for tape playback by following the same steps.

1 POWER
Switch ON the power "STANDBY ⏻ /ON" switch.

2 INPUT SELECTOR
Press the "TAPE" button.

3 EJECT
Press the eject button, and than insert the cassette to be used for playback.

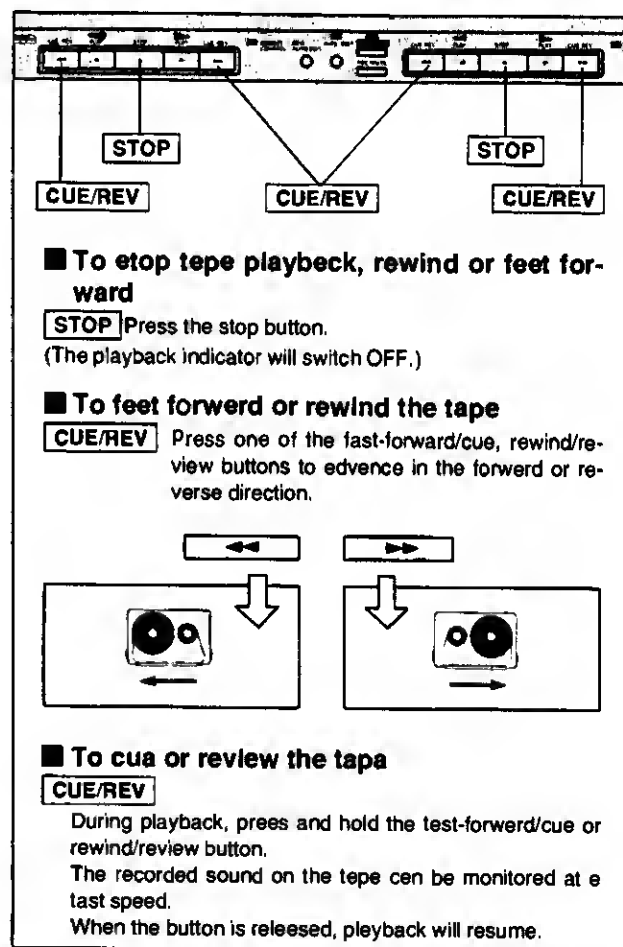(The part of the cassette where the tape is exposed should face down-ward.)

4 PLAY
Press the forward- (or reverse-) side playback button to select the side ("A" or "B").
(The playback indicator will illuminate, and playback will begin.)
PLAY/▶: Plays side "A" (side facing outward).
PLAY/◀: Plays side "B".

5
Adjust the volume level and the tone quality as desired. (Refer to pages 16 and 28.)

■ Notes
- Tape deck 1 and tape deck 2 cannot be used for playback at the same time.
- If the playback button of one of the decks is pressed while the other deck is in the play mode, playback of the first deck will stop.
- If the volume level is too high during "cue" and "review" operation, the tweeters in the speaker systems may be damaged.

STOP   CUE/REV   CUE/REV   STOP   CUE/REV

■ To stop tape playback, rewind or fast forward
STOP Press the stop button.
(The playback indicator will switch OFF.)

■ To fast forward or rewind the tape
CUE/REV Press one of the fast-forward/cue, rewind/review buttons to advance in the forward or reverse direction.

■ To cue or review the tape
CUE/REV
During playback, press and hold the fast-forward/cue or rewind/review button.
The recorded sound on the tape can be monitored at a fast speed.
When the button is released, playback will resume.

Full automatic-stop system

When the tape reaches its end, it will stop automatically.

-20-

Playing tapes recorded with Dolby NR

DOLBY NR

Set the Dolby noise-raduction switch to "ON".

■ **Dolby noise-reduction system**

The Dolby noise-reduction system is a system designed to effectively reduce the annoying high-frequency "hissing" noise, typically heard trom tapes it this system is not used. During recording, the system functions to increase the level of the high-trequency part ot the sound, and then, during pleyback, that seme portion is weekened and returned to the previous level. This unit is equipped with the B-type Dolby noise-reduction system.

Dolby noise reduction manufectured under license from Dolby Leboratories Licensing Corporation.

"DOLBY" end the double-D symbol ▢◖ are trademerks ot Dolby Laboretories Licensing Corporation.

Various playback functions

REVERSE MODE

The reverse-mode selector can be used to select either or three different playback functions.

⇌ ; Select this mode to playback only ona side of a cassette tape.

When the playbeck has tinished, tape movement will stop automatically.

⊃ ; Select this mode to playback both sidss of the tape only once.

When the both sides pleyback has finished, tape movement will stop eutomatically.

If playback starts from the reverse side, only thet side will be played end stop.

∞ ; (When tape is loaded into deck 1 or 2 only.)

Select thia mode to playback both aides of a cassette tape continuously.

This playback will continue until the stop button is pressed.

(When tapes are loaded into both dack 1 and 2.)

Select this moda to playback both sidas (from sida "A" to "B") of the cassetta tapas continuously.

(Thie is celled "eeries pleyback".)

This mode is convenient tor enjoyment of a long period of uninterrupted background music.

This series playback can start from any of decks.

This playback will continue until the stop button is pressed.

Automatic-tape select function

This unit is equipped with the eutometic-tepe-eelect feature; it autometicelly detects the type of tape being used, and then makes the suitable edjustment eccordingly of the bias for recording and equelization.

Listening to Compact Discs

STOP   PAUSE
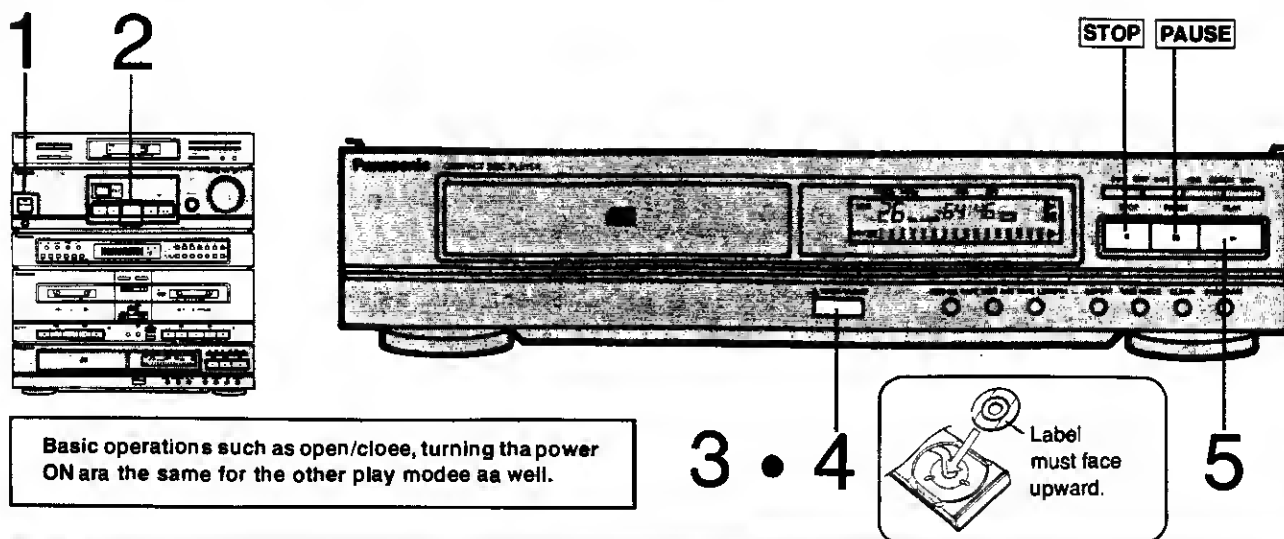
Basic operations such as open/cloee, turning tha power ON ara the same for the other play modee aa well.
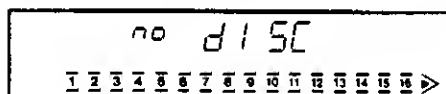
3 • 4

Label must face upward.

5

Normal play

Playing an entire disc from the first track to tha last.

1 POWER
Switch ON the power "STANDBY ⏻ /ON" switch.

Turn down your amplifier voluma first. If, inadvertently, tha voluma is sat too loud, damaga to your speakars could result.

2 INPUT SELECTOR
Press the "CD" button.

`CD`

`no dISC`
`1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 ▷`

3 OPEN/CLOSE
Press the open/close button to open the disc holder snd Insert a disc.
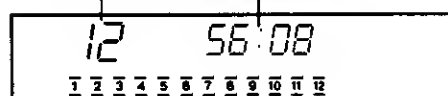
4 OPEN/CLOSE
Press the open/close button agsin to close the disc holder.

> Do not stick your fingar through tha hola in the middle of the disc holder. (It could get caught when tha holdar closes.)
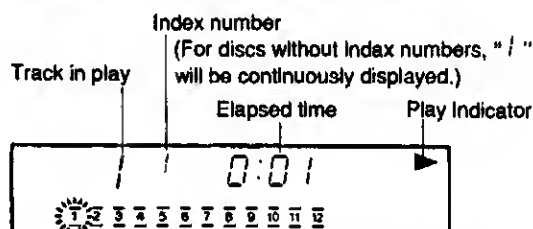
Tha total number of tracks on the disc and the total playing time are displayed.

Total number of tracks

Total playing tima

`12    56'08`
`1 2 3 4 5 6 7 8 9 10 11 12`

5 PLAY
Press the play button.

Disc play begins from tha first track on the disc.

Index number
(For discs wlthout Index numbers, " / " will be continuously displayed.)

Track in play

Elapsed time   Play Indicator

`/ /   0:01   ▶`
`1 2 3 4 5 6 7 8 9 10 11 12`

Tha bars above and below the number of the track in play flash. Thay go out when play finishes.

•The unit stops automatically when the last track on tha disc finishes pleylng. (The display raturns to the total number of tracks and total playing time indications.)

■ To stop disc plsy
STOP Press the stop button.

The unit switches to the stop mode and the totel number of tracks and total playing tima are displayed.

■ To temporsrily stop disc play
PAUSE Press the pause button.

Pause indicator

`/ /   0:01   ▮▮`
`1 2 3 4 5 6 7 8 9 10 11 12`
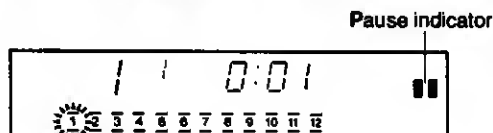
•Press tha play button to play again.

Notes:
• Attampting to change discs while the disc holdar is in the process of opening can scratch or damaga your discs.
•Tha total playing time displayed Includes the silent sectione between tracks. For this reason, It may differ by a few seconds from the playing time printed in the disc's liner notes.

Clear button
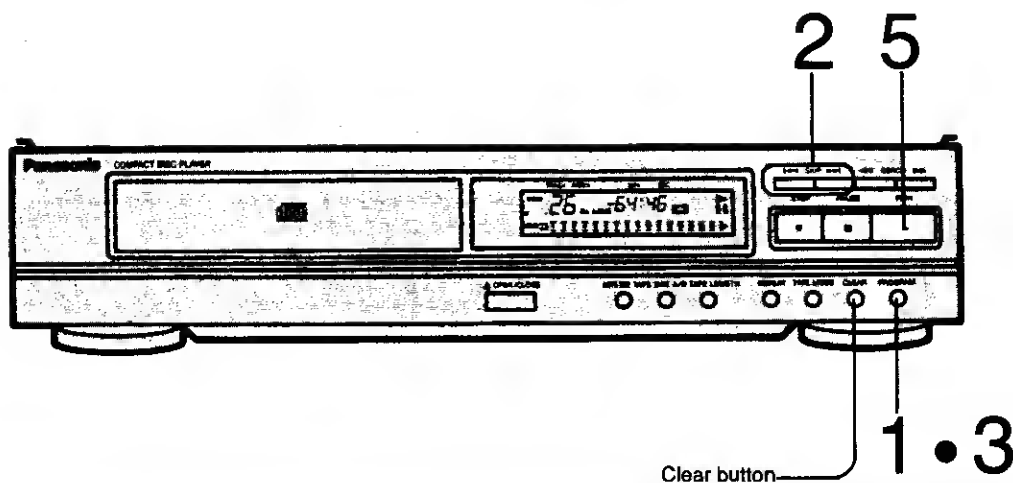
Program play

This function allows you to program up to 20 tracks on the disc in any order you choose.

1 `PROGRAM`
Press the program button.

Program indicator

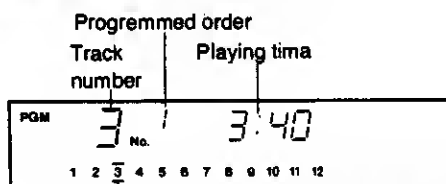### 2 `|◄◄ SKIP ►►|`
Press the skip button to select the desired track.

For example; to select 3.
Press the ►►| button three times.

3 `PROGRAM`
Press the program button again to enter the desired track.

Programmed order
Track number
Playing time

The bars above and below the number 3 illuminate, indicating that track has been programmed.

4 Repeat the steps 2 and 3 to add the tracks.

- If you continue adding track numbers by repeating the above step, the programmed order counter counts up and the playing time for each new track is added to the total playing time. If the total playing time exceeds 99 minutes or the track number 21 (or higher) has been specified, the display reads "– –:– –".
- To specify the same track number successivly, press the skip button (►►| or |◄◄) to move to the other track then the desired one. Then press the skip button again to return to the desired track.
- When the 21st program has been performed, "F" (full) appears on the display, indicating that no more tracks can be added to the programmed sequence.
- Track numbers not actually on the disc can not be programmed.
- To clear the program track, press the clear button. Each time the clear button is pressed, the last track in the programmed sequence will be cancelled.

5 `PLAY`
Press the play button.

The programmed sequence is played beginning from the first track you entered.
- If pressing the numeric button at the remote control transmitter, you can add tracks to the programmed sequence during disc play.
- The unit stops automatically when all the programmed tracks have finished playing.

■ To cancel program play, press the program button.

Pressing the stop button in the stop mode can also cancel program play.

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Listening to Compact Discs (continued)

NUMERIC BUTTONS

REPEAT
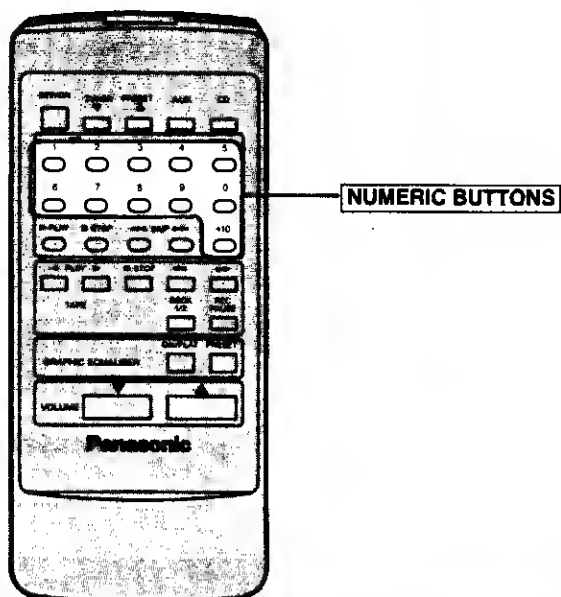
## Direct access play (by remote control transmitter only)

1 ~ +10

To listen to a disc from track 3, press the numeric button 3.
Play begins directly from track 3.

Choosing a specific track

- **Tracks 1–9:** Press the appropriate numeric button 1–9 directly.
- **Tracks 10 and up:** First press +10, then 1–0. (Press +10 twice and 0 for 20, +10 three times and 0 for 30, and so on.)

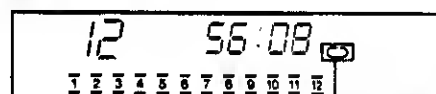- Playback begins from the track selected and continues from subsequent tracks until the end of the disc is reached.
- The unit stops automatically when the last track on the disc finishes playing.
- During play, you can skip to the specific track directly by using the numeric button.
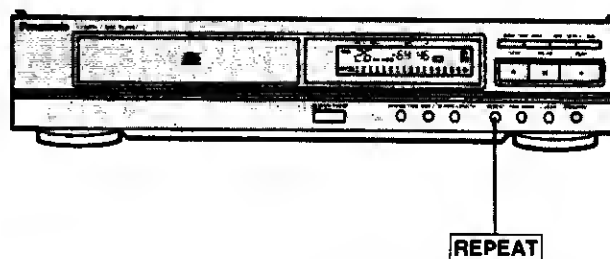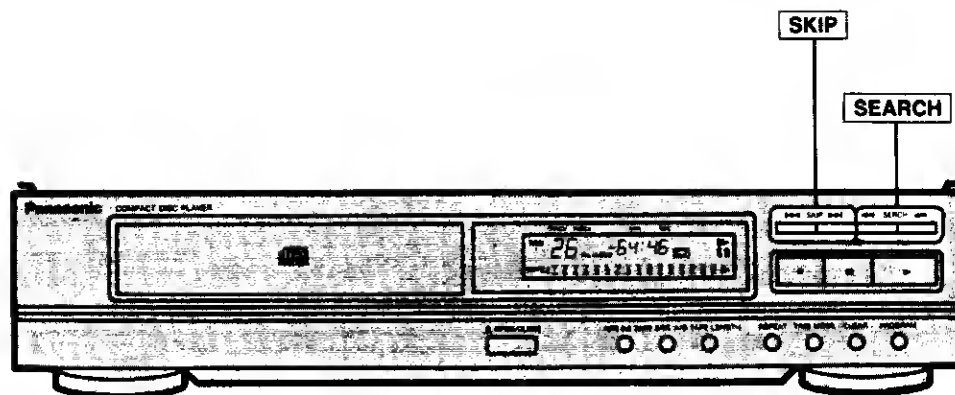
Repeat play

REPEAT

Press the repeat button.

Repeat play Indicator

- Pressing the repeat button again cancels the repeat play.
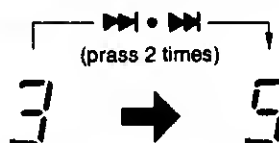
Skip play

|◄◄ SKIP ►►|

This function allows you to skip to the beginnings of tracks preceding or following the track in play and begins play immediately. It is e good idea to keep an aya on the track number display when using this function.

Track number display
(Index number display)

/ / 0:01 ►
1 2 3 4 5 6 7 8 9 10 11 12
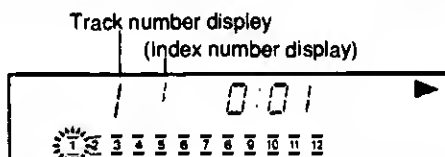
●To skip forward, press the skip button (►►|).

Tha unit skip ahead ona track aech time the button is prassed.

For axample, to skip from track 3 to track 5:

►►| ● ►►|
(prass 2 times)

3 ➡ 5

●To skip backward, press the skip button (|◄◄).

Tha tirst tima tha button is preased, tha unit skips back to the beginning ot tha track in play. Than it skips beck one track tor aach additionel press.

For axample, to skip from track 5 to treck 3 during play:

|◄◄ ● |◄◄ ● |◄◄
(press 3 times)

3 ⬅ 5

● You can also skip tracks when tha unit is in tha pause mode. Tha unit skips to tha track selactad and remains in the pause mode.

Search play

◄◄ SEARCH ►►

This function ellows you to saarch rapidly torward or backward on tha disc for spacific sactions.

●To search forward, press the search button (►►).

The unit begins seerching in e torwerd diraction.

●To search backward, press the search button (◄◄).

Tha unit begins saarching in a ravarse diraction.

● Sound trom the disc can be heard as tha pickup movas. Tha output laval at this tima is decreased by 12 dB (¼) compered with tha normal level.
● Tha aaarch spaed is slow when tha button is prassed et tirst and becomas tastar it you keep it prassed down. Ralaasa the button when you reach the desired point on the disc.
● Search play can also be ectiveted in the peuse mode. As one ot tha search buttons is released tha unit will raturn to tha pause moda.

Listening to Compact Discs (continued)

TIME MODE

1
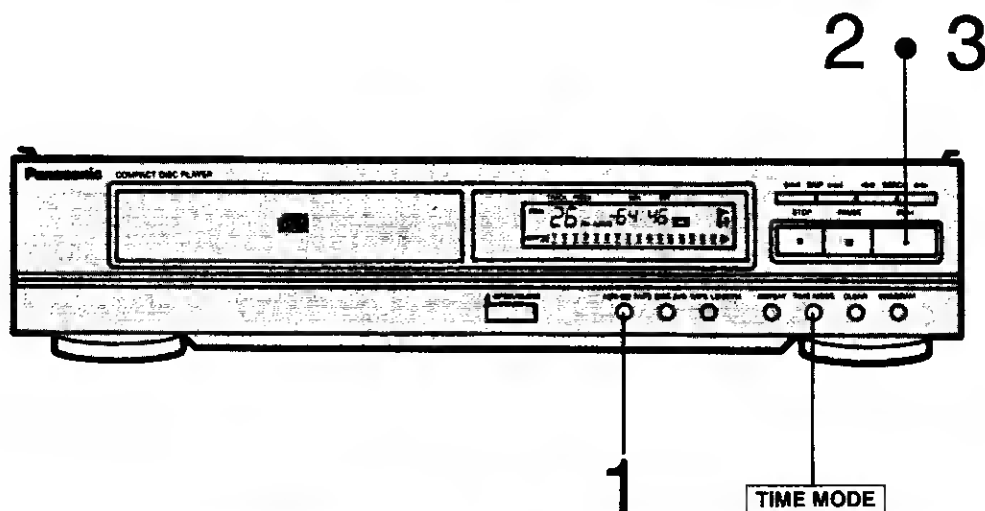
Auto cue

AUTO CUE

Tha euto cue function allows the unit to wait in the standby condition at the beginning of aach tuna so as to start play right when you are raady. Whan aach tuna finishes playing, the unit skips to the beginning of tha next tune end switches to the play standby moda. This function is especielly convenient whan usad together with programmed play.
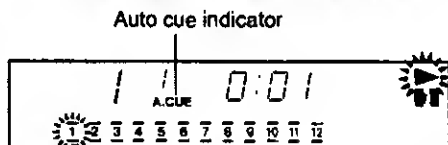
1 **Press the auto cue button.**

2 **Presa the play button.**
The unit switchas to the pley standby moda.

Auto cue indicator

I I   O:O I
A.CUE

1 2 3 4 5 6 7 8 9 10 11 12

3 **Preaa the play button again to atart play.**

● Prassing the auto cua button again cancels auto cue.

Note:
Tha auto cue function may not tunction at tha beginning ot tuna properly if a salaction begins with e very soft passage or if thera is a lot of beckground noise.

Time mode display

TIME MODE

Each time tha time moda select button is prassed during play or when tha unit is in tha pause moda, the display changes as follows.

① Number of treck in pley and elepsed time

② Total ramaining time on disc

③ Tima ramaining in track in play

④ Total elapsed time sinca beginning ot disc
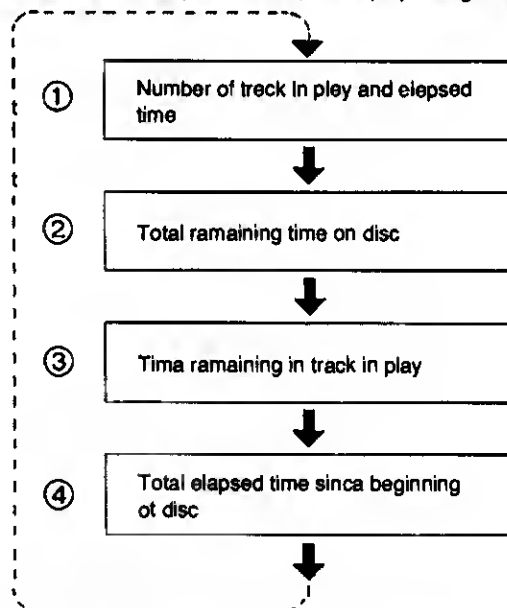
● While the track number 21 or higher is playing:
The "— — :— —" indication will be shown on disptay ③.

Listening to Other Source
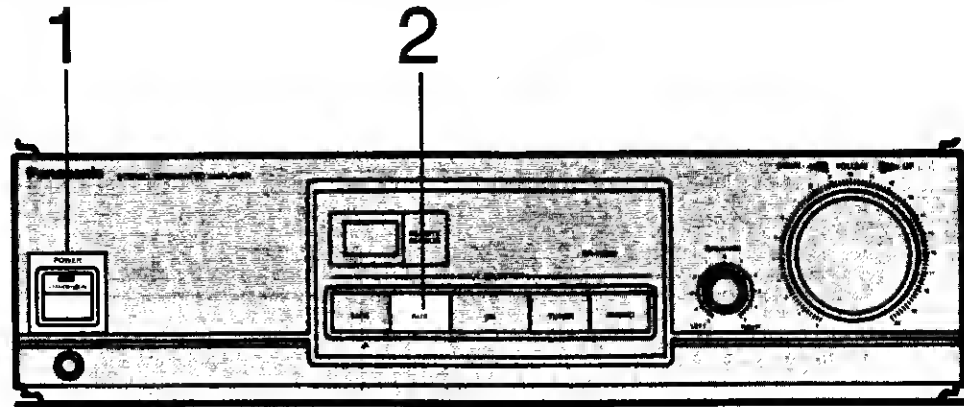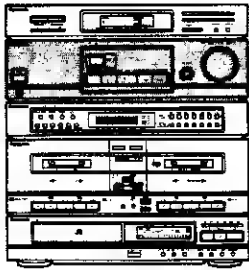
1 | **POWER**
Switch ON the power "STANDBY ⏻/ON" switch.

2 | **INPUT SELECTOR**
Press the "AUX" button.
AUX: Press to listen to sound from equipment connected to the "AUX" terminals of this unit.

$\boxed{AUX}$

3 Begin the operation of that unit.
(Refer to the operating instructions of each component.)

4 Adjust the volume level and the tone quality as desired.
(Refer to pages 16 end 28.)

Changing the Tone Quality

equelization-mode
indicetor "EQ ON"

equalization-mode
indicetor "FLAT"

−24 ▷ EQ ON	▷□	1/HEAVY
− ▷ FLAT	▷□	2/CLEAR
	▷□	3/SOFT
−12 ▷ MEMORY	▷□	4/VOCAL
− ▷ MANUAL	▷□	5/NATURAL
−0 ▷ FIXED	▷□	6/SUPER BASS

63Hz 160Hz 400Hz 1kHz 2.5kHz 6.3kHz 12.5kHz FULL RANGE

To adjust the desired tone quality
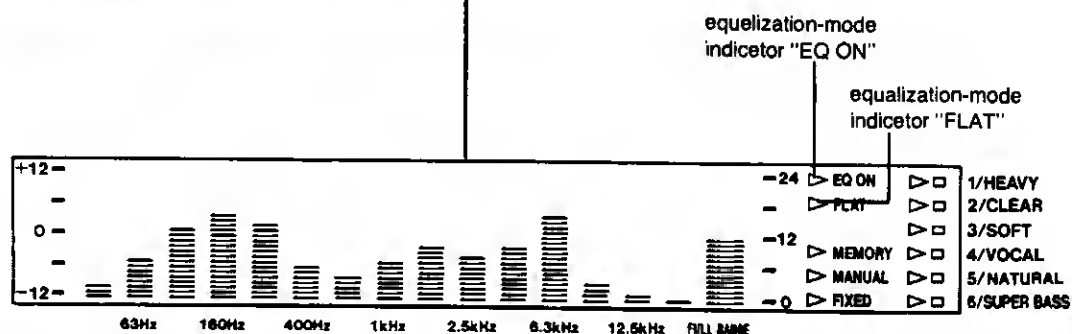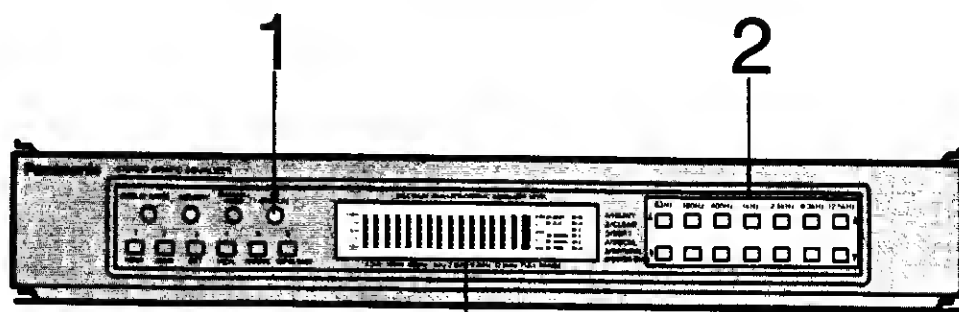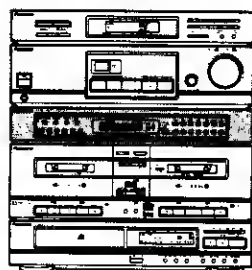
While listening to the music, adjust the sound to suit your taste.

1 EQ ON/FLAT
Press the equalizer on/flat button to set the equalizer on mode.
(The equelizetion-mode indicator, "EQ ON" will illuminete.)

2 ▲▼
Press the equalizer level control buttons to adjust the level of each frequency range.
▲...for increasing
▼...for decreasing
■If pressed, the equelization-level will be shown.
It will return to previous display mode 3 seconds efter released.

■ When the equalizer effect is not necessary.
Press the equalizer on/flat button to set the flat mode.
(The "FLAT" indicator will illuminete.)
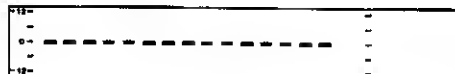
Characteristics of each frequency range

63 Hz:	The deep bass range
160 Hz:	The bass range
400 Hz:	The fundamental tonel renge of music
1 kHz:	The tonal range which adds tension to the sound
2.5 kHz:	The tonel range where strings and winds are most prominent
6.3 kHz:	The tonel range which adds gloss to the sound
12.5 kHz:	The tonal range which adds glitter to the sound

Equalization-memory indicator

Equalization-prasat indicators

—24 ▷ EQ ON	▷□	1/HEAVY
— ▷ FLAT	▷□	2/CLEAR
	▷□	3/SOFT
—12 ▷ MEMORY	▷□	4/VOCAL
— ▷ MANUAL	▷□	5/NATURAL
—0 ▷ FIXED	▷□	6/SUPER BASS

+12
0
-12

63Hz   160Hz   400Hz   1kHz   2.5kHz   6.3kHz   12.5kHz   FULL RANGE
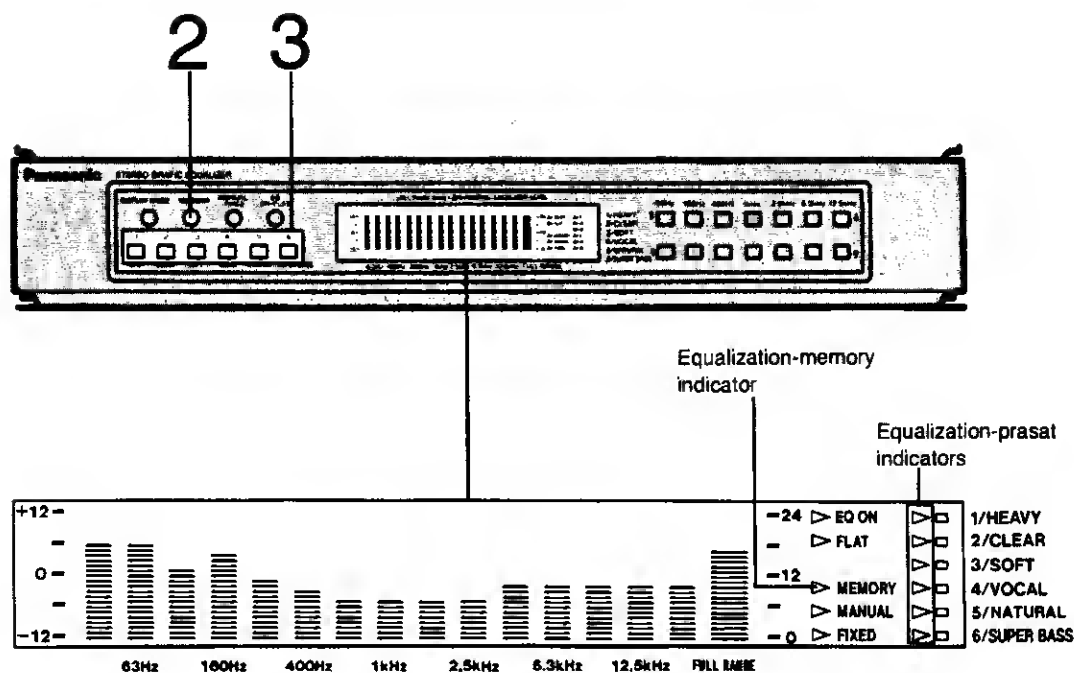
To program an equalization curve into the memory

As many as six curves can be programmed into and retained by the memory of this unit. It is convenient to program those curves that are frequantly usad.

1 Adjust to the desired equalization curve.
(Adjust by following the steps in "To adjust tha desired tona quality" on pege 28.)

2 [MEMORY]
Press the "MEMORY" button.
(The aqualization-mamory indicator will illuminata.)
•To cancal mamory programming, prass the memory button once egein.

3 [1~6]
Press one of the preset-memory buttons (1-6), whichever is to be used to make the programming to the memory.
(The corresponding equelization-praset indicator will illuminata, and the programming will be made.)

Note:
If a new curva is programmed for a number for which a curve is alraady programmad in the memory, the previously programmed curve will be arased.

Changing the Tone Quality (continued)

1 **2**

Memory-mode indicators

Equalization-preset indicators

−24 ▷ EQ ON	▷□	1/HEAVY
− ▷ FLAT	▷□	2/CLEAR
−12	▷□	3/SOFT
− ▷ MEMORY	▷□	4/VOCAL
− ▷ MANUAL	▷□	5/NATURAL
− 0 ▷ FIXED	▷□	6/SUPER BASS

+12 —

0 —

−12 —

63Hz   160Hz   400Hz   1kHz   2.5kHz   6.3kHz   12.5kHz   FULL RANGE
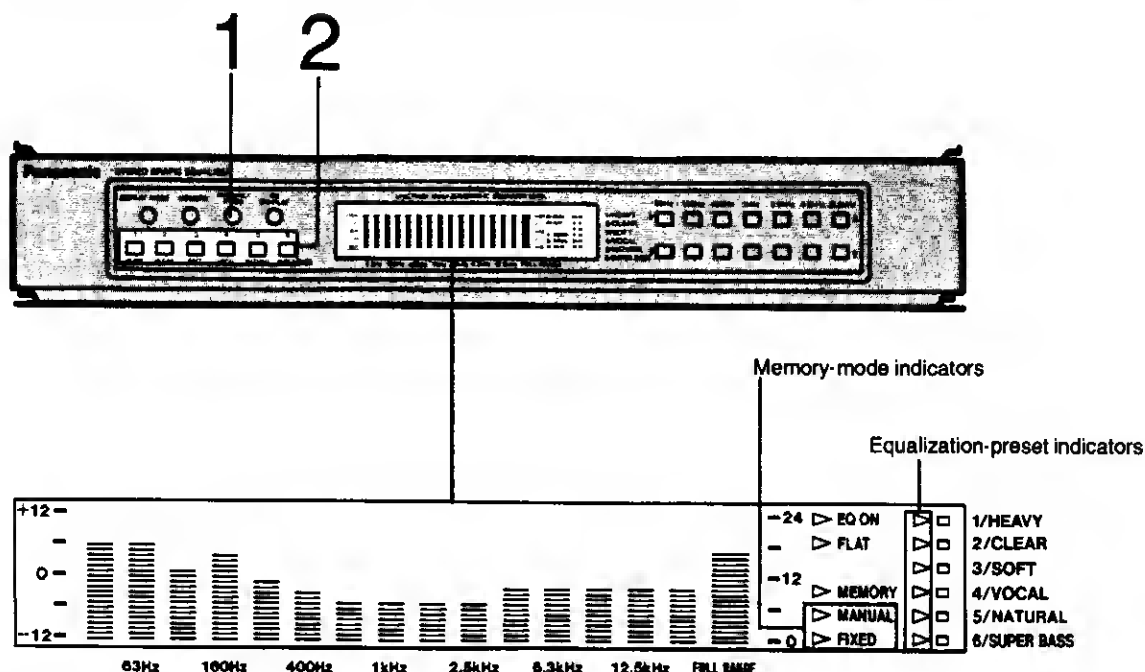
To retrieve equalization curves from the memory

This unit has been pre-programmed with six types of typical equalization curves which are applicable to cartain styles of music.

1 | MANUAL/FIXED |

Press the "memory mode-select" button.

MANUAL: Select this mode when you want to retrieve e equalization curve that you have programmed into memory.

FIXED: Select this mode when you want to retrieve e equalization curve thet was originally programmed into memory as a permanent ("FIXED") curve.

(The memory-mode indicator will indicete the selection mode.)

2 | 1~6 |

Press one of the preset-memory buttons, whichever corresponds to the curve to be retrieved.

(The corresponding equelization-preset indicator will illuminete.)

●While in the "FIXED" mode, if one of the equalizer level-control buttone ie pressed, the unit will eutomatically switch to the "MANUAL" mode.

Note:
Curves progremmed into the mamory will be retained for about a few days if the AC power supply cord is unplugged. If curves are aresed, they must be programmed egain. Nota, however, that curves originelly programmed beforehand into the unit's memory es permanent curvas (tha "FIXED" curves) will not be erased.

■ **"MOST RECENT" memory**
If, after the buttons end equelizetion levels of this unit have been set, the power is switched to "STANDBY" and then ewitched ON, the setting of eech button and the equelization levels will be entered into the memory, and these settings will return when the power is switched ON.
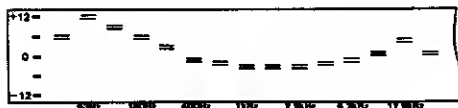
Equalization curves pre-programmed to this unit

1/ HEAVY
This curve can be used to edd "punch" to rock end other music.

2/ CLEAR
This curve cen be used to clerify the treble range of jazz, etc.

3/ SOFT
This curve can be used to listen to background music, etc. et e low volume level.

4/ VOCAL
This curve can be used to clerify vocal music.

5/ NATURAL
This curve cen be used to listen to the neturel tone.

6/ SUPER BASS
This curve can be used to boost the dynamic low sound.

Recording (tape deck 2 only)

Digital frequency/
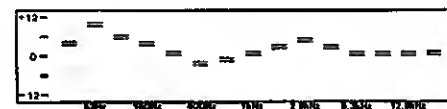Input selector

3   2 4

1 5

Input selectors

6   7
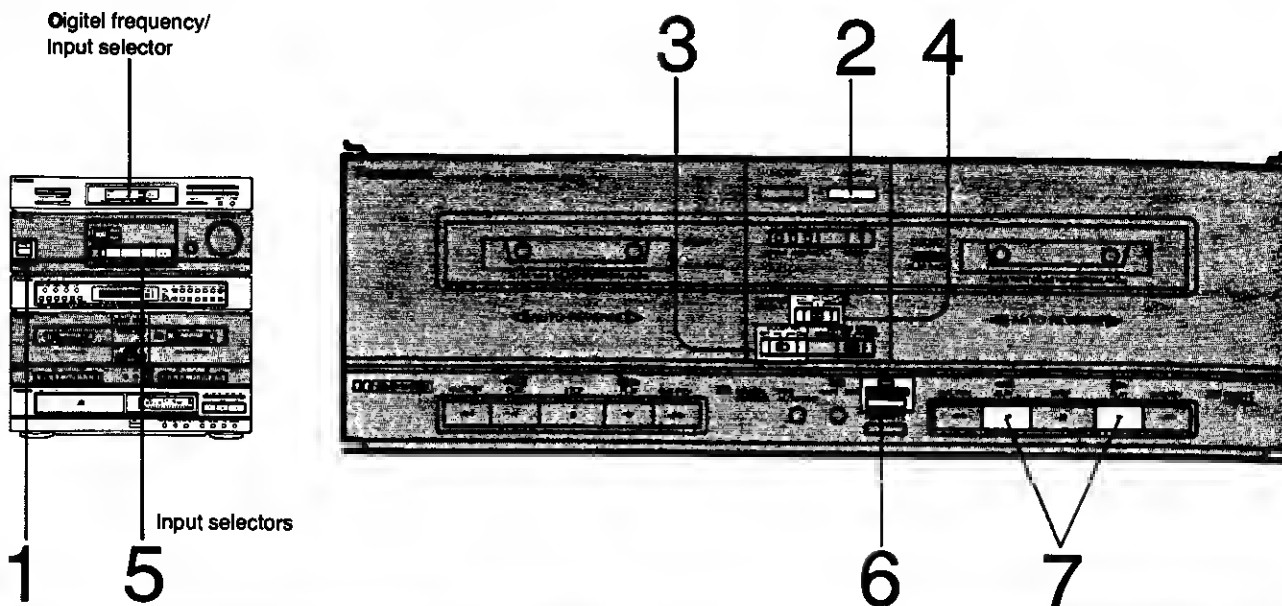
To record from a sound source

1 POWER
Switch ON the power "STANDBY ⏻ /ON" switch.

2 EJECT
Press the eject button, and then insert the cassette to be used for recording into tape deck 2.

> (The part of the cassette where the tape is exposed should face downward.)

Note:
The normal or chromium type of tape is recommended.

3 DOLBY NR
To record with the Dolby noise-reduction effect, set the Dolby noise-reduction switch to "ON".

4 REVERSE MODE
Select the side(s) of the tape (one side only or both sides) upon which the recording is to be made.
⇌ ; Select this setting to record on one side only.
At this setting, the recording will stop at the end of one side of the tape.
⊃ ; Select this setting to record on both sides.
The recording will be made on side "B" after recording on side "A"; the tape will stop at the end of side "B".

5 INPUT SELECTOR
Press the input selector corresponding to the sound source (compact-disc player, phono disc, etc.) from which you want to make the recording. (The selected source will be shown by the digital frequency/input display.)

6 REC PAUSE
Press the recording pause button.
(The recording pause indicator will illuminate, and the playback indicators start flashing. The tape deck will be in the recording stand-by mode.)

7 PLAY
Press the playback button (The recording will begin.), then begin the sound source to be recorded.
•If only one side of the tape (reverse mode position: ⇌) is to be recorded, press the playback button that corresponds to that side.
•To record on both sides of the tape (reverse mode position: ⊃), press the "A" side playback button (▶).
(The playback indicator will illuminate steadily, and the recording will begin.)
This unit has been set for the optimum recording level.

Edit-Recording from Compact Discs

1 Prepare for recording on cassette deck.

2

3

Automatic edit

This unit automatically calculates how many tracks will fit on a given tape side and programs them. The recording can be started by simply pressing the play button.

1 Carry out the steps 1 to 6 of "To record from a sound source" on page 32.
- When you want to record programmed tracks, first program tracks in memory using the program play procedure (see page 23). Then press the edit tape length button.
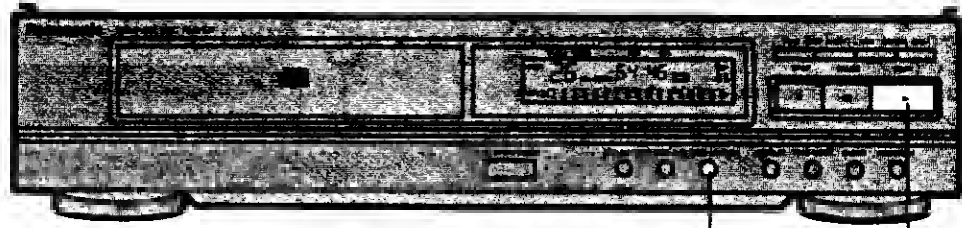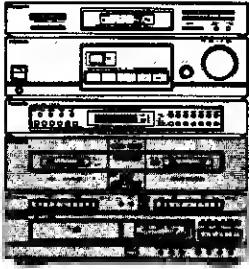- Recording will take place automatically from the forward side to the reverse side of the tape, so insert the tape with the side from which you intend to record first facing toward you, then set the reverse mode selector to " ⊃ ".

2 TAPE LENGTH
Press the edit tape length button to select the tape length.
Each time the button is pressed the tape length indicator changes as follows. Choose the length of the tape you will use.

```
┌─ C-46 ⇨ C-60 ⇨ C-90 ⇨ C ----┐
└ - - - - - - - - - - - - - - - ┘
```

```
  C -46
EDIT 1 2 3 4 5 6 7 8 9 10 11 12
```
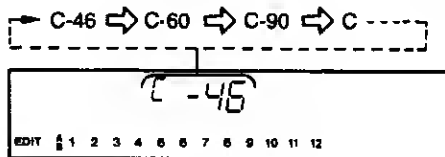
Last track of side A

Number of tracks to be recorded on side A

Remaining time on side A

```
PGM    7.7     5:32
Side A No.
EDIT 1 2 3 4 5 6 7 8 9 10 11 12
```
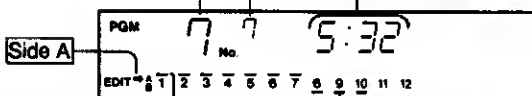
Tracks to be recorded on side A (upper bar)

Tracks to be recorded on side B (lower bar)

- To see the data of side B, press the tape-side select button.

3 PLAY
Press the play button.
Recording will begin from side A.

- When the tracks programmed for tape side A have finished playing, the unit searches for the beginning of the first track to be recorded on side B and switches to the pause mode. When the auto reverse mechanism of the cassette deck works at the end of side A and the tape switches to side B, recording for side B starts automatically.
- During recording, silent gaps of approximately 3 seconds are inserted between tracks automatically (auto space function).

Note:
According to the discs, the little sound of the beginning of the next track may be recorded onto the end of the track.

Notes:
- The maximum allowable playing time for editing is 99 minutes.
- When the track number 21 (or higher) is specified, the edit function does not work.

■ To select your desired recording time
Press the edit tape length button 4 times to select "C---". Press the skip button repeatedly until the desired tape's playing time in minutes (1-99) will appear.
- **Using the remote control transmitter**
  Press the numeric button to select the time.
  For example:
  "C-52": First press [5] then press [2].

- If you make a mistake, select "C---" once again and enter the correct tape length.

1 Prepare for recording on cassette deck

Manual edit

This function allows you to add selections one by one to each tape side and check the time remaining after each entry in order to minimize wasted tape.

1 Csrry out the stepa 1 to 6 of "To record from s aound source" on page 32.

2 TAPE LENGTH
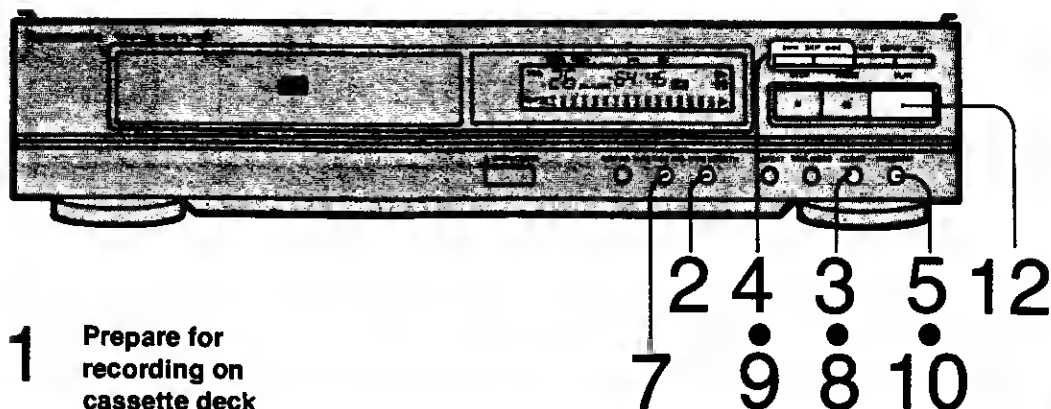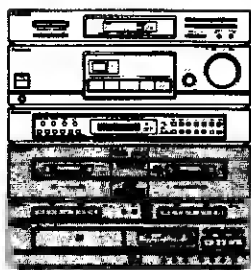Preas the sdit tape length button to select the tape length.
The automalic editing functions· and the trecks are programmed on the both tape side A and B.

3 CLEAR
Press ths clear button until "0" appears in the trsck number display.
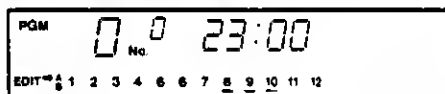
4 ⏮ SKIP ⏭
Press ths skip button to select the deaired track for sids A.

5 PROGRAM
Press the program button to enter the desired trsck.

Number of trecks to be recorded

Remaining time
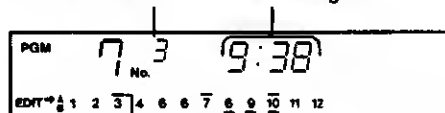
Bars for trecks reserved for side A illuminete

6 Repeat step 4 snd 5 to add the trsck snd complete the progrsm for side A.
• If the remaining tape is nol sufficienl to hold the last track programmed, a negative number wiii be displayed.
In this case, press the clear button to cancel the iasl track in Ihe sequence lrom memory and enter a track which better malches Ihe remaining time.
• 3-second silent gaps whlch are automatically Inserted between tracks are included in the remaining lime.

7 SIDE A/B
Press the tape-aids seisct button to switch to tspe slde B.

8 CLEAR
Presa the cisar button untii "0" sppears In ths track number dispiay.

9 ⏮ SKIP ⏭
Press the skip button to select the dssired track for side B.

10 PROGRAM
Press ths program button to sntsr ths desired track.

11 Rspeat the 9 snd 10 steps to sdd the trsck and compiete ths progrsm for aids B.

12 PLAY
Presa ths pisy button.
Recording will begin lrom side A.

Notes:
• The maximum ailowable playing time for editing is 99 minutea.
• More than 20 programs cannot be edited.
• When the track number 21 (or higher) is specilied, the edit function does not work.

-35-

Edit-Recording

"Edit-recording" is recording from one tape to another.

1 2   4 3 5 6

Stop button   Stop button

Rewind auto
edit button   7

1 POWER
Switch ON the power "STANDBY ⏻/ON" switch.

2 INPUT SELECTOR
Praaa the "TAPE" button.   `TAPE`

3 EJECT
Preaa tha eject button on deck 2, and inaert the tapa upon which tha recording will be made.

(The part of the cassette where the tape Is exposed should fece downwerd.)

Note:
The normel or chromium type of tape is recommended.

4 EJECT
Preaa the eject button on deck 1, and insert the tape to be playad back.

5 REVERSE MODE
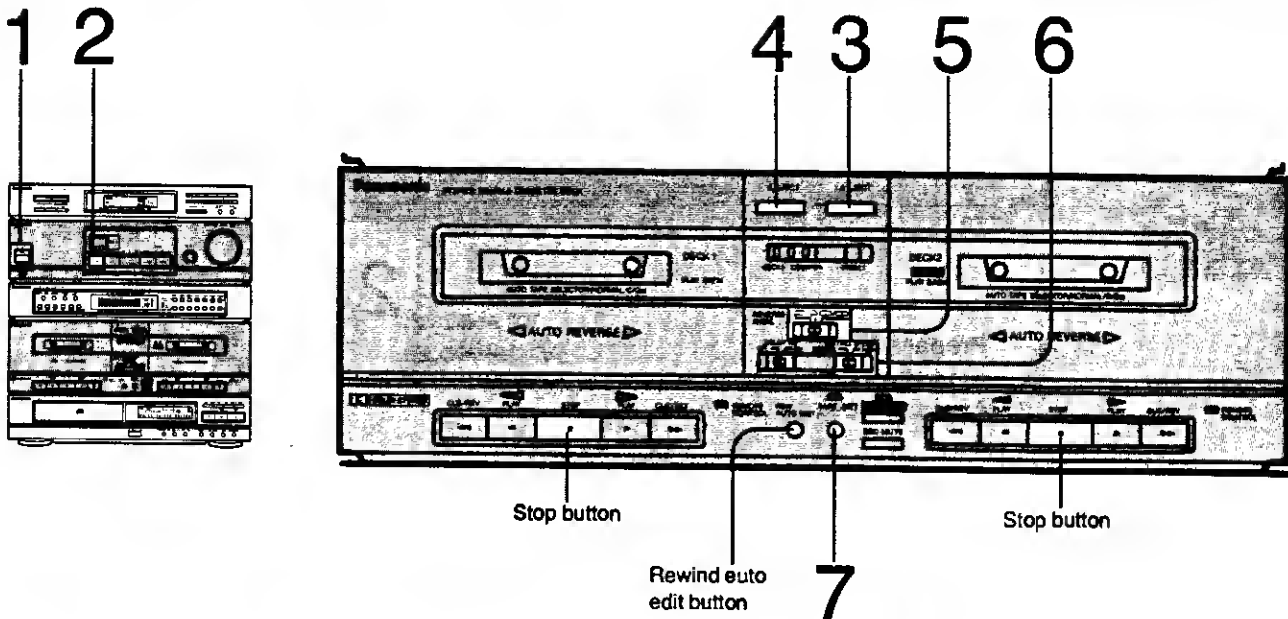Selact tha alda(s) of the tape (one side only or both aidea) upon which the recording ia to be made.

⇌ ; Select this setting to record on one side only.
At this setting, the recording will stop et the end of one aide ot the tape.

⊃ ; Select this setting to record on both sides.
The recording will be made on side "B" affer recording on side "A"; the tape will stop et the end of side "B".
(When the playback in the "B" side by deck 1 has finiahed, tape movement in deck 1 will stop end deck 2 will stop.

6 EDITING SPEED
Select the speed at which the recording will be mada.
NORMAL; For operation at the normal tepe speed.
HIGH; For operation at the high tape speed.

7 TAPE EDIT
Preaa the tape edit button.
The indicator will illuminate.
By pressing the tape edit buffon at this time, recording will begin immediately at the present tepe locations. (Playbeck of deck 1/Recording onto deck 2.)

Pressing the rewind euto edit button will cause both tapes to rewind to their beginning, at which point recording will start.

■ To atop edit-recording
Press any ot the stop buffon.
(Both of the tepea in the deck will atop.)

Notes:
- Do not chenge the editing tape-epeed setting while a recording is being made. (To do so will cauee a momentary sound distortion in the recording.)
- The recording level es well as the equalizer effects and the Dolby noise-reduction effects will be recorded on the tape in tape deck 2 exactly es they were originally recorded on the tape in the tape deck 1.
- The monitor sound in Dolby recording can be played beck accurately if the Dolby noise reduction switch ie eet to "ON".
- While en edit-recording ia in progress, you can enjoy some other sources. Select the desired sound source by ueing the input selectore, end start the performence.
Then egein, when you want to lieten to the tape on edit-recording, press the "TAPE" button of the input selectors of this unit.
- When performing the edit-recording, be aure to turn off the power for the video or TV product. (To do so will cause the distortion sound may be recorded.)

Remote-Control Operation
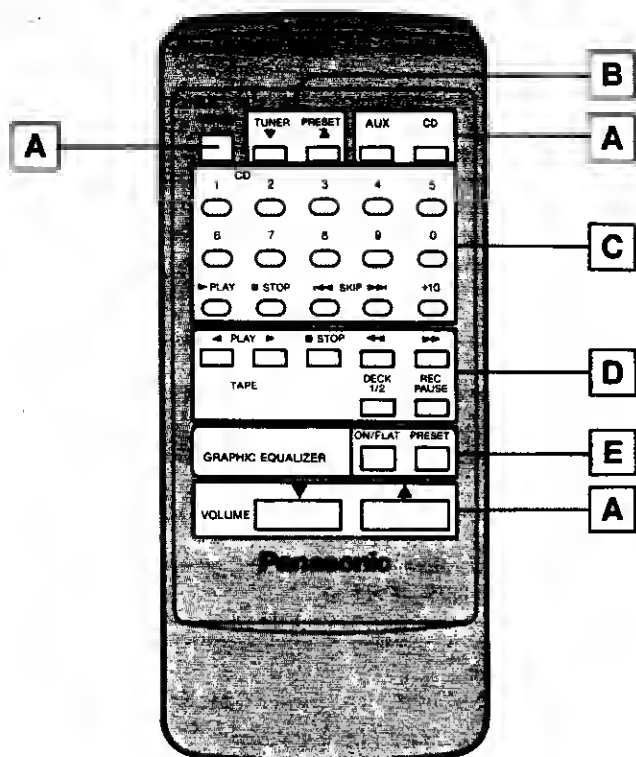
For detailed information concerning operation staps, etc., please refer to the appropriate page for each unit and the respective operation instructions. For this system, you can listen to tapes or compact discs, etc., by operating the remote-control transmitter without using the input selectors.

A Amplifier controls

OFF/ON
Press this button to switch the unit ON or to the stand-by condition. Note that there is no need to press this button if the unit's power is ON. (If it is pressed, the unit will be switched to the stand-by mode.)

AUX, CD
These buttons are used to select the program source (AUX, CD)

AUX: Press to listen to sound from equipment connected to the "AUX" terminals of this unit.
CD: Press to listen to compact discs.

VOLUME
For adjustment of the volume level.
▲: To increase the volume level.
▼: To decrease the volume level.

B Tuner controls

▼-TUNER PRESET-▲
To select a preset channel. (Refer to page 18.)
(There will be an automatically change of the input selector.)
▲: Press to change to a higher channel.
▼: Press to change to a lower channel.
(If either button is pressed and held, the channel will change continuously.)

C Compact-disc controls

1~0, +10
These buttons are used to specify the desired track number.
• The play begins automatically from the selected track when a track is selected while the unit is in the stop mode.

To select the specific track number

• **Tracks 1–9:** Press the appropriate numeric button 1–9 directly.
• **Tracks 10 and up:** First press +10, then 1 – 0. (Press +10 twice and 0 for 20, +10 three times and 0 for 30, and so on.)

► PLAY
Press this button to start disc play.

■ STOP
Press this button to stop disc play.

◄◄ SKIP ►►
Press one of these buttons to select the desired track.

◄◄ for a prior track
►►: for a track ahead

D Cassette tape deck controls

◄ PLAY ►
Press this button to start the tape.
►: "A" side (side facing outward)
◄: "B" side
(There will be an automatic change of the input selector.)

STOP
Press this button to stop the tape.

◄◄ ►►
Press one of these buttons to forward or rewind the tape. Hold one of these buttons to cue or review the tape.

DECK 1/2
Press to select the deck ("DECK 1" or "DECK 2") to be used.

REC PAUSE
Press to change to the recording stand-by mode.

E Graphic equalizer controls

ON/FLAT
Press to select the equalizer effect on or off.

PRESET
First press and hold to select the manual or fixed program mode, and then press to select the preset channel of the equalization curve.

About Cassette Tapes

●**120-minute (or longer) tapee**
Because this tape is very thin, it might stretch during use, become tengled with rotating parts in this unit, and/or tape movement might not be stable.

●**Fe-Cr tape (TYPE III)**
The high range will be amphasized and a ftat frequancy rasponsa characteristic cannot be obtained.

●**Matal tape**
In particular, recordings will be vary distorted.

Notes about the handling of cassettes

If the tapa in the cassetta is loose, tha tape can aasily braak during usa or otherwise be damaged. Nevar touch the tape itself, or ettempt to pull it out of the cassette.

Use a pancil or similar objact to take up the slack.

Avoid tape storage in the following places

Tapa can be damagad if it is storad in places such as described below.
●Whare the tamperatura is high (95°F/35°C or higher) or whara tha humidity is high (80% or highar).
●Whara thara ia a strong magnetic fiald (near a speaker, on top of a TV, atc.).
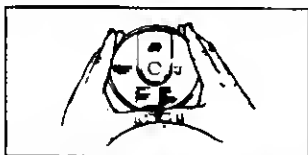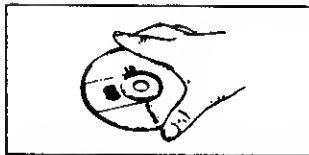●In diract sunlight.

About Compact Discs

Handling precautions

Only compact discs having this merk can be used with this unit.
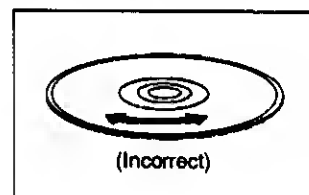
COMPACT
disc
DIGITAL AUDIO

Observe tha following pracautions to anjoy tha same outstending aonic performance from your Compact Discs for many yaars.

●Hold compact discs by the edgas so the surface is not soiled with fingarprints.

●Be carefui not to scretch the surface with fingernails or other sharp objects, particularly whan inserting and removing discs from their cases.
●Do not bend tha disc.
●Do not use record cleening sprays or static electricity prevention liquida.
●Do not wipe with benzina, thinner or any othar solvent. If the aurfece is soiled, wipe gently with e soft, damp (watar only) cloth.

●When wiping discs, elways move the cloth directly outwerd from the canter of the disc, not in e circuler motion as with standard phonograph records.

(Corract) (Incorrect)
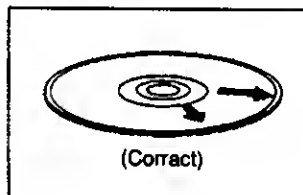
(In compact discs, circular scratchas along a lina of pits are more tikely to cause errors then streight scratches ecross many lines of pits.)
●If the disc is brought from e cold environment into a werm room, moistura may form on the disc. Wipe this off with e soft, dry, lint-free cloth before using the disc.
●Do not dry discs with e heir dryer.
●Do not write on the labet aide with a belt-point pen, hard pencil or other writing utansil.
●Handla compact discs with care. Fingarprints, dirt and scratches can cause skipping and distortion.

Storage precautions

●Be sure to atore discs in their cases to protect them from dust, scretches and warping.
●Do not place or atore discs in the foltowing places:
1) Locations exposed to direct aunlight.
2) Humid or dusty locations.
3) Locationa directly exposed to a heat outlet or heating appliance.
4) In the glove compertment or rear ledga of an automobile.

Maintenance

To essure good sound quelity for recording end pleyback, be sure to cleen the heeds efter approximately every 10 hours of use.

1. Switch the power of this unit to stendby mode.
2. Press the eject button to open the cassefte holder.
3. Clean the heads, pinch roller and the capstan shaft of each deck with a cotton swab (or with a soft, lint-free cloth) slightly moistened with elcohol.

   Do not use eny solution other than alcohol for heed cleaning.
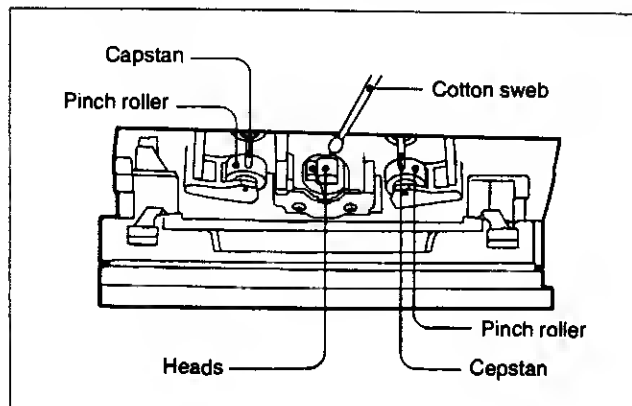
Head demagnetization

In order to maintain good sound quelity during recording and pleyback, it is recommended thet the heeds should be demagnetized if distortion or poor sound quelity persist efter cleening the heede.

If the heads become magnetized, they could create noise in recordings, loss of high-frequency responee, or eresure of veluable recordings. Severel types of head demegnetizers ere eveileble and mey be purchased et local electronics supply stores. Follow the instructions that ere supplied with the device.

● Do not bring eny type of metal objecte or tcols such es megnetic screwdrivers in contact with the heed assembly.

Maintenance of external surfaces

To clean this unit, use a soft, dry cloth.

For very dirty surfeces, dip a soft cloth in e weak soap-end-water solution and wring well. After cleening, wipe with e soft, dry cloth.

Never use elcohol, peint thinner, benzine, or a chemically treeted cloth to clean this unit.

Such chemicals mey demage the unit's finish.

Troubleshooting Guide

Betore requesting service for this unit, check the chart below for a possible ceuse of the problem you ere experiencing. Some simpla checke or e minor adjustment on your pert may eliminete the problem end restore proper opsretion.

It you are in doubt ebout some of the check pointe, or it the remedies indicated in the chert do not solve the problem, refer to the directory ot Authorized Service Center (enclosed with this unit) to locete a convenient service center.

Problem	Probable cause(s)	Suggested remedy

While listening to FM broadcasts

Problem	Probable cause(s)	Suggested remedy
An unusuel hlesing nolse is haard when llstening to the broadcast in stereo, but not heard when liatening monaurally.	Due to the differences between a moneurel end e stereo signel, e higher level ot signal strength is required tor proper stereo reception. If the signel level is low, e hissing noise may be produced on the stereo chennel.	•Try reducing the treble sound by using the equalizer controls. •Set for moneural reception to reduce the hiss. Note, however, thet the broedcast will not be heerd as stereo. •Try chenging the location, height and/or direction ot the antenna.
Noise is excessive in both stereo and monaural broedcasts.	Poor location and/or direction ot the entenna.	•If en indoor antenne is being used, change to an outdoor entenna. •Try using an antenna with more elements.
	Trensmitting station is too tar awey.	
Excessiva distortion in the sound ot stereo broadcasta.	Nearby building or mountain. [Multipath distortion is being ceused by the mutual interference ot broedcast signals received directly from the transmitting stetion (direct waves) and signals being retlected trom nearby buildings or mounteins (retlected waves).]	•Try chenging the locetion, height end/or direction of the antenne. •If an indoor entenna is being used, change to an outdoor antenna. •Try using an entenna with more elements.
Sound is distorted, "popping" noise la heard, and/or the voluma level becomas low.	Broadcast signels ere being disturbed by nearby automobile traffic or airplanes.	•Relocate the antenna and the connection wires to a place tarther away from where eutomobiles pess.

While listening to AM broadcasts

Problem	Probable cause(s)	Suggested remedy
An unusual "beat" aound is heard.	Unit is being used at the same time as the television set.	•Switch OFF the television set, or use this unit farther eway from it.
	Interference from adjacent broadcast signals.	•Try reducing the treble sound by using the equalizer controls.

While using the tape deck

Problem	Probable cause(s)	Suggested remedy
Previouely recorded sound hae not been aresed.	Erese head is dirty.	•Cleen the heed.
Sound output ie hoarse or unstaady.	Heads are dirty.	•Clean the heads.
	Tepe is dameged.	•Try operation with a new cassette; if there is no problem with the new cassette, discard the dameged cessette.
Sound is low, poor tona, Intarmittent sound, noisa.	Heeds, cepsten and/or pinch roller ere dirty or tepe is demaged.	•Clean the heads, cepstan and/or pinch roller, or try e new cassette.
Recording is not possible.	Erese-prevention tebs heve been removed.	•Attech tape to cover the space left by removal ot the erase-prevention tebe.

While listening to a compact disc

Problem	Probable cause(s)	Suggested remedy
The tray does not close when e disc is loaded and the open/close button is preesed.	The disc is not sitting correctly in the disc tray.	Re-insert the disc.
The total number ot tracke and total tlma era not dispiayed when a disc is loaded. The disc does not stsrt being pieyed when the pley button is pressed.	The disc is loeded upside down.	Re-load the disc.
	The disc is dirty.	Wipe the disc with a soft cloth.
	The disc is scratched.	Replace the disc with e new one.
	The disc is badly warped.	
	The disc used is e non-stenderd one.	Replece the disc with e different one.
	The moisture has condensed inside the CD player.	Switch ON the power, then weit tor 60 minutee before using it.
A cartaln pert of the disc cannot be played.	The disc is dirty.	Cleen the disc with e soft cloth.
	The disc is scretched.	Skip the scretched pert of the disc (skip play).

Problem	Probable cause(s)	Suggested remedy

Problems noted at all times

Problem	Probable cause(s)	Suggested remedy
No eound ie heard when e tape or disc is pisyed.	The incorrect input selector has been pressed.	●Check to be sure thet the correct selector is pressed.
Whsn lletening to stsreo sound, the aound lacke depth (i.e. week beee, tinny sound).	One of the speakers is connected out of phese [(+) → (−), (−) → (+)].	●Re-connect the speakers meintaining proper polerity [i.e., (+) → (+), (−) → (−)].
A low-pitched noise ("hum" or "buzz") is heerd.	The power cord or e fluorescent light, etc., is neer the connection cords.	●Try moving this unit as far es possible from the electric eppliance.
Sound ie not heerd from the epeaker eystsm on one eide.	The speaker cords are disconnected.	●Check end correct the connections of the speeker cords.
	The belance control is set too far to one side.	●Set the control so thet sounds are heerd at the center, between the speaker systems.
Sound stope during a performance, or no sound is heerd when the power is ewitched ON.	The protection circuitry hes functioned beceuse the positive end negative speaker connection wires are "shorted".	●Check end correct the connections of the speeker cords.
	The impedance of the speeker system being used is less than the rating.	●Switch OFF power end then ON egein, end listen at a low volume level, or use speeker systems of the proper impedence reting.
When listening to etereo eound, the left end right sounde sre reversed.	The left end right speaker connections or source connections ere reversed.	●Check all connections end correct them it necessary.

While using the remote control transmitter

Problem	Probable cause(s)	Suggested remedy
The remote control transmitter does not function.	Batteries ere installed incorrectly.	●Insert the batteries so that the positive (+) and negstive (−) polarities ere correct.
	The remote control trensmitter batteries sre consumed.	●Replace them with new batteries.
	There Is sn obstruction between the remote control trensmitter end this unit.	●Remove the obstruction.
	The remote control transmitter is not correctly fecing the remote control signal receptor ot each unit.	●Fsce the remote control trensmitter correctly towerd the remote control signal receptor of each unit.

About moisture for compact disc player

Moisture may form on the lens in the following cases...

●Immedietely efter a heeter has been tumed on.
●In a steemy or very humid room.
●When the unit is suddenly moved from a cold environment to a werm one.

If moisture forms inside this unit, it mey not operete properly. To correct this problem, turn on the power end weit sbout one hour for the moisture to eveporete.

Technical Specifications

■ AMPLIFIER SECTION

40 Hz~16 kHz continuous power output
both channels driven   2×45 W (THD 1%, 8Ω)
1 kHz continuous power output
both channels driven   2×50 W (THD 1%, 8Ω)
MPO   2×90 W (THD 10%, 8Ω)
PMPO   360 W (THD 10%, 8Ω)
Total harmonic distortion half power at 1 kHz   0.03% (8Ω)
Power bandwidth both channels driven, −3 dB
    20 Hz~40 kHz (8Ω)
Frequency response
PHONO   30 Hz~15 kHz
    RIAA standard curve ±1 dB
AUX   20 Hz~30 kHz (−3 dB)
Input sensitivity and impedance
PHONO   2.5 mV/47 kΩ
AUX   150 mV/12 kΩ
Graphic equalizer   ±10 dB
    (63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz, 12.5 kHz)
Damping factor   20 (8Ω)
Load impedance   8~16Ω

■ FM TUNER SECTION

Frequency range   87.50~108.00 MHz
Sensitivity   25.2 dBf, (5 µV, IHF'58)
S/N 26 dB   3.8 µV (40 kHz mod., 75Ω)
Total harmonic distortion
MONO   0.3%
STEREO   0.5%
S/N
MONO   60 dB (65 dB, IHF)
Image rejection at 98 MHz   35 dB
Stereo separation
1 kHz   35 dB
Antenna terminals   75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range
MW   522~1611 kHz
LW   144~288 kHz
Sensitivity (for 500 mW)
MW (at 999 kHz)   200 µV/m
LW (at 254 kHz)   500 µV/m

■ CASSETTE DECK SECTION

Track system   4-track, 2-channel
Heads
playback   Solid Permalloy Head (Rotary head)
record/playback   Solid Permalloy Head (Rotary head)
erasure   Double gap ferrite head
Motor   DC servo motor
Recording system   AC bias, 85 kHz
Erase system   AC erase, 85 kHz
Tape speed   4.8 cm/sec (1⅞ ips)
Frequency response
NORMAL   40 Hz~14 kHz, ±3 dB
CrO₂   40 Hz~15 kHz, ±3 dB
S/N (CrO₂ type tape)
Dolby NR off   53 dB (A-WTD)
Dolby NR on   82 dB (CCIR)
Wow and flutter   0.1% (WRMS)
Fast forward and rewind time
    Approx. 110 seconds with C-60 cassette tape

■ CD SECTION

S/N ratio   95 dB or more
T.H.D   0.03% or less
Wow. & flutter   below measurement threshold
Sampling frequency   44.1 kHz
D-A conversion   multi stage noise shaping
Beam source   semi conductor laser
    (wave length 780 nm)
No. of channels   2-channels, stereo
No. of memory   20-tracks random programming

■ GENERAL

Power consumption   265 W
Power supply   AC 50 Hz, 230~240 V
Dimensions (W×H×D)   360×381.5×270.8 mm
Weight   10.0 kg.

This apparatus was produced to BS 800.

Notes:
1. Specifications are subject to change without notice.
   Weight and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

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